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LA's COMPUTER MAGAZINE

MID-DECEMBER 1988 • 51

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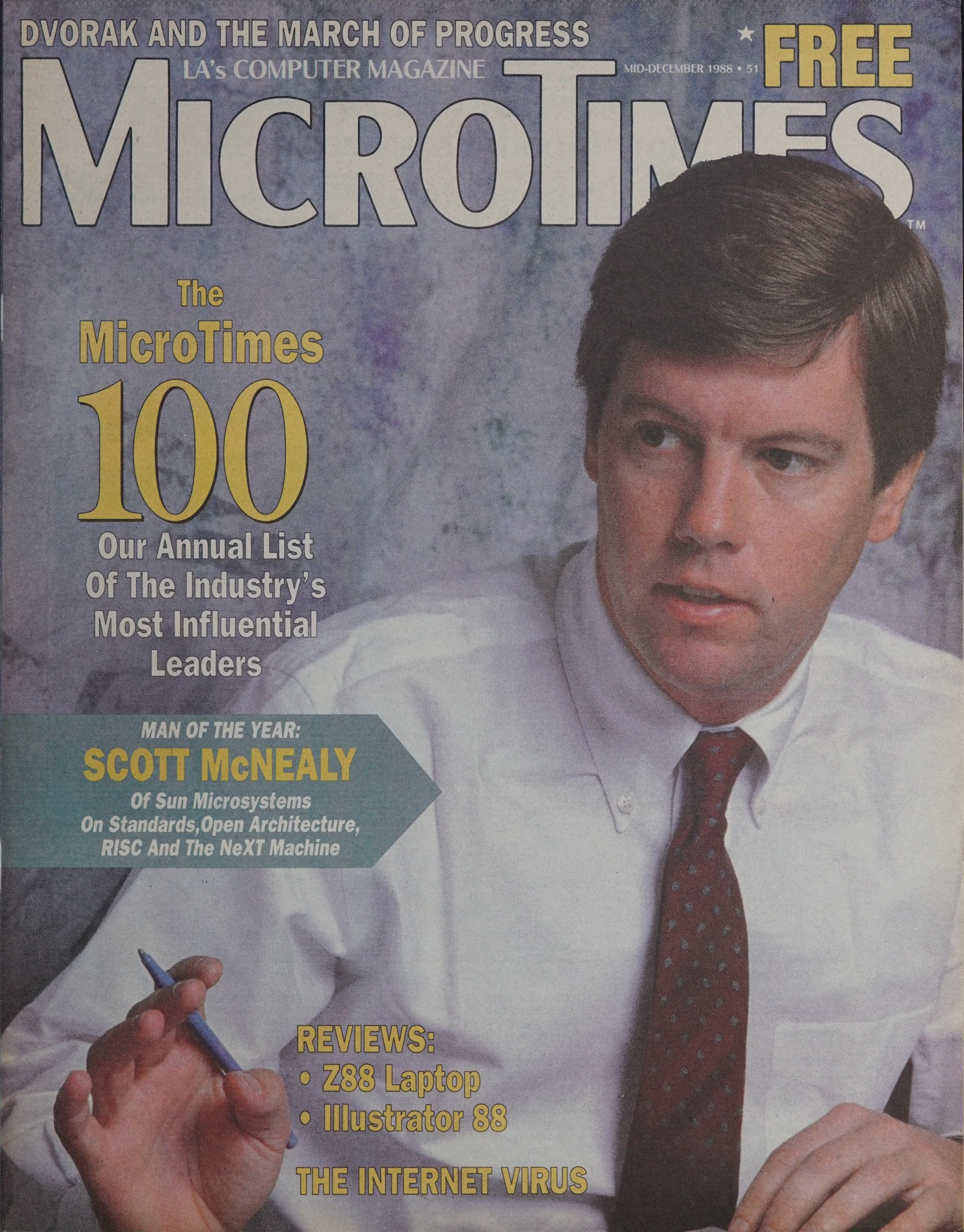
MicroTimes™

The MicroTimes 100

Our Annual List Of The Industry's Most Influential Leaders



MAN OF THE YEAR:

SCOTT McNEALY

Of Sun Microsystems
On Standards, Open Architecture, RISC And The NeXT Machine

REVIEWS:
- Z88 Laptop
- Illustrator 88

THE INTERNET VIRUS

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MID-DECEMBER 1988 ISSUE #51

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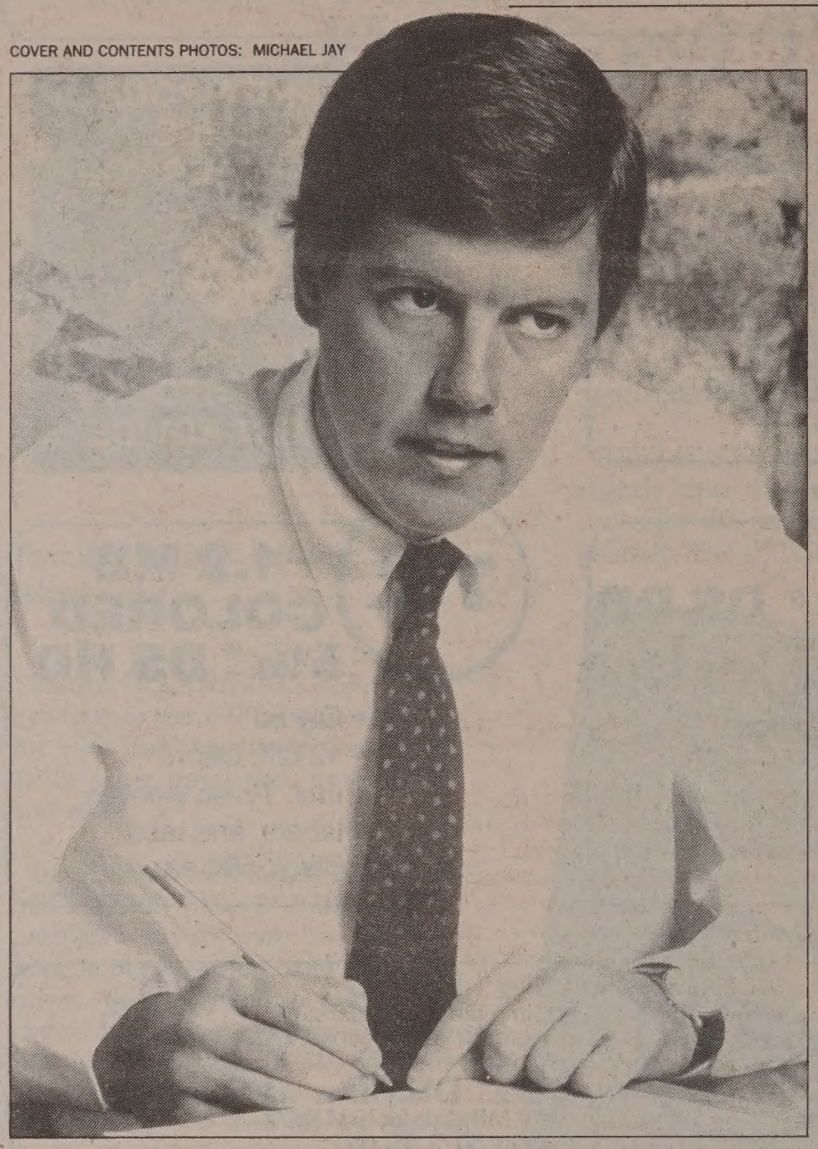

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The World According to Sun
Scott McNealy Sets the Record Straight

By Mary Eisenhart and Steve Guttman

Sun Microsystems president/chairman/CEO (and *MicroTimes* Man of the Year) Scott McNealy talks about the philosophy behind his company's phenomenal success and future strategies. In the process, he takes a few shots at the press's apparent inability to understand Sun, the hidden pitfalls of the NeXT workstation and the dubious merits of the Open Software Foundation.

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Our Annual List Of The Industry's Most Influential Leaders

This year's list includes some familiar faces and quite a few new ones, and indicates some interesting trends: a sudden industry-wide interest in Xerox PARC technology, the importance of connectivity and the increasingly ubiquitous UNIX.

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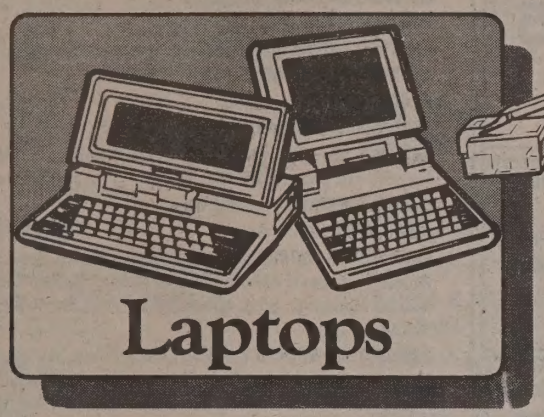
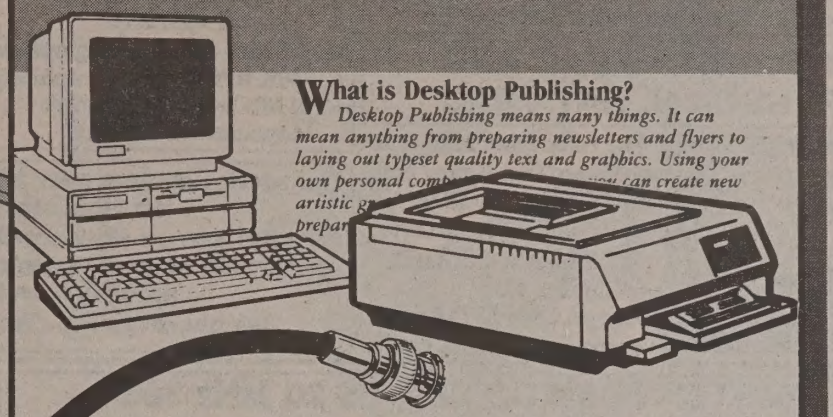


Laptops



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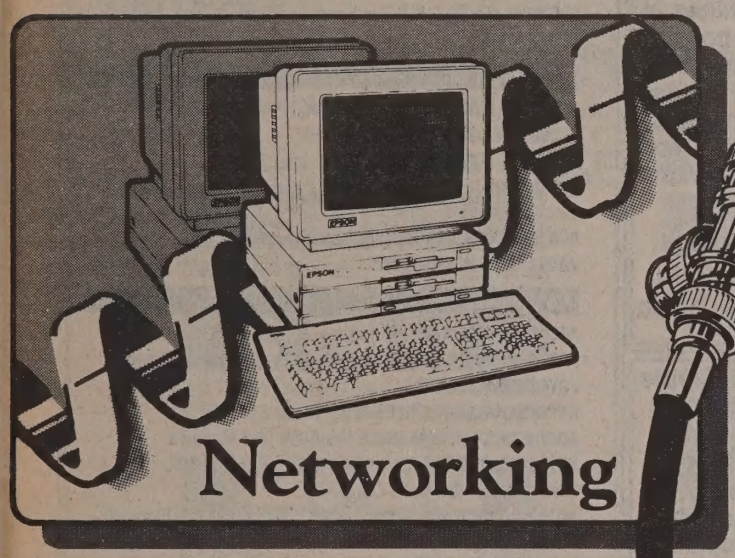
Desktop Publishing



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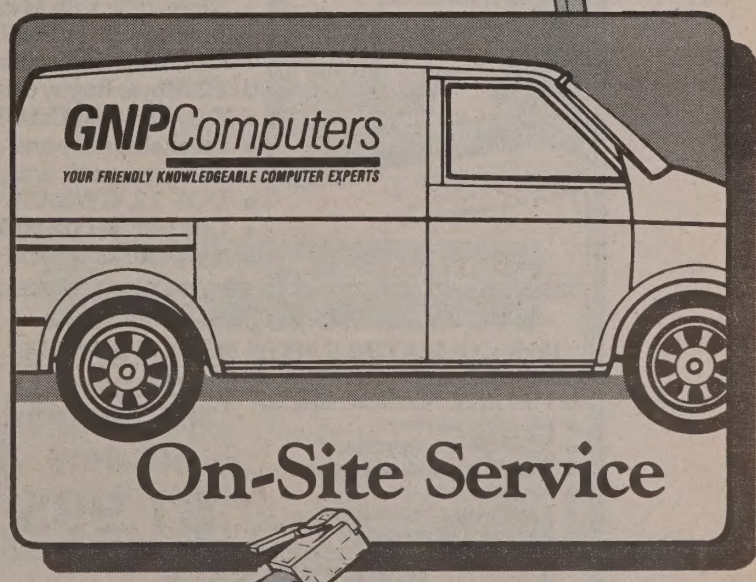
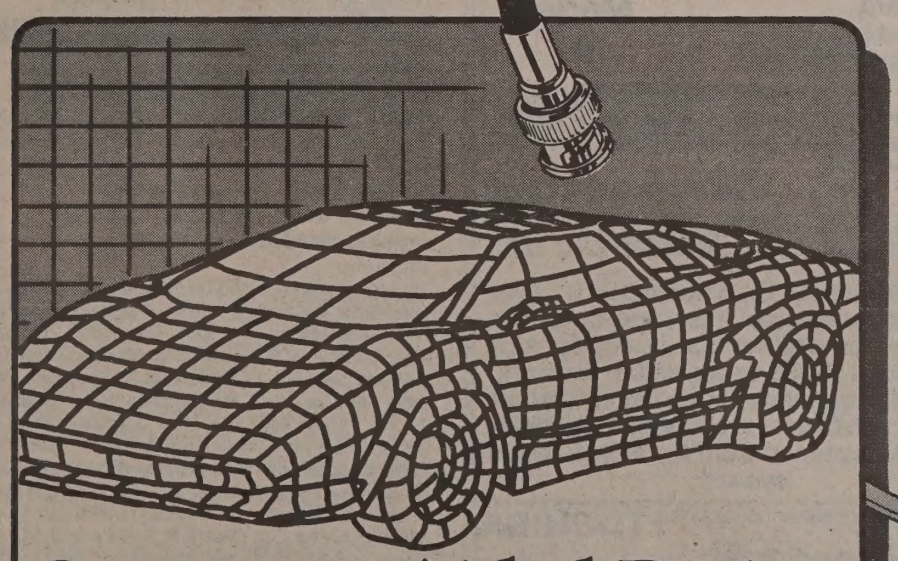


On-Site Service



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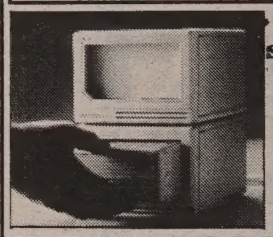

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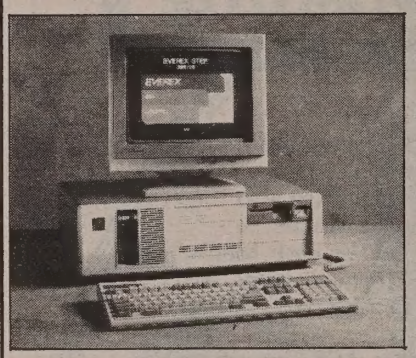

- 80386 32-bit CPU, 20/10/6.7 MHz switchable, 0 wait-state operation
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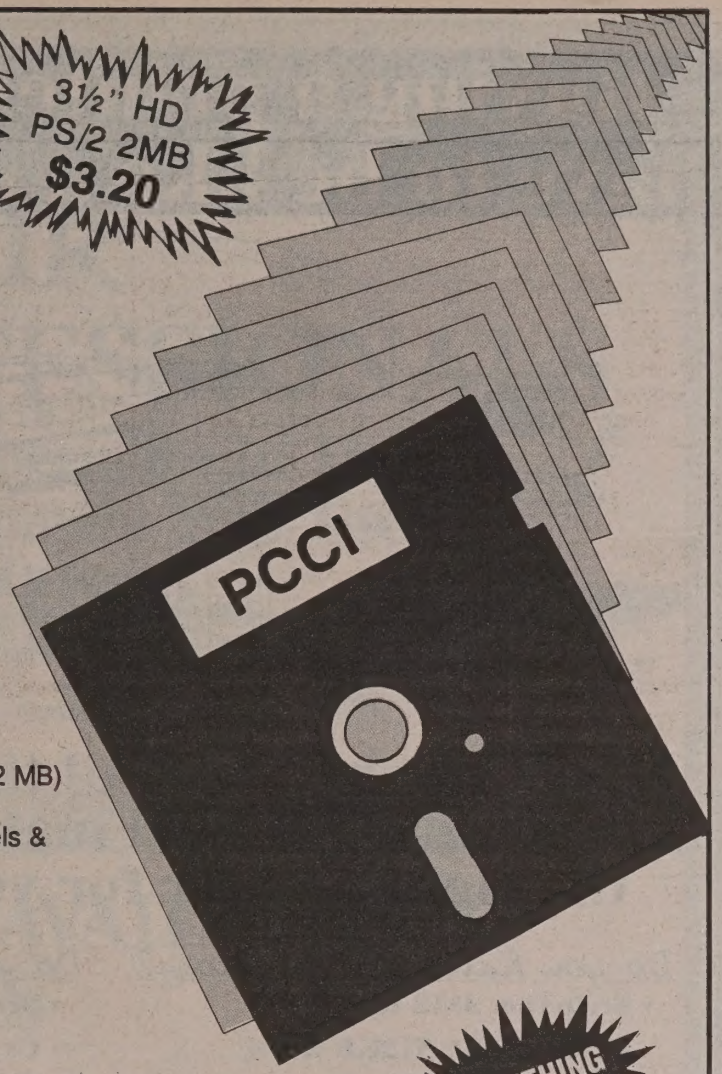

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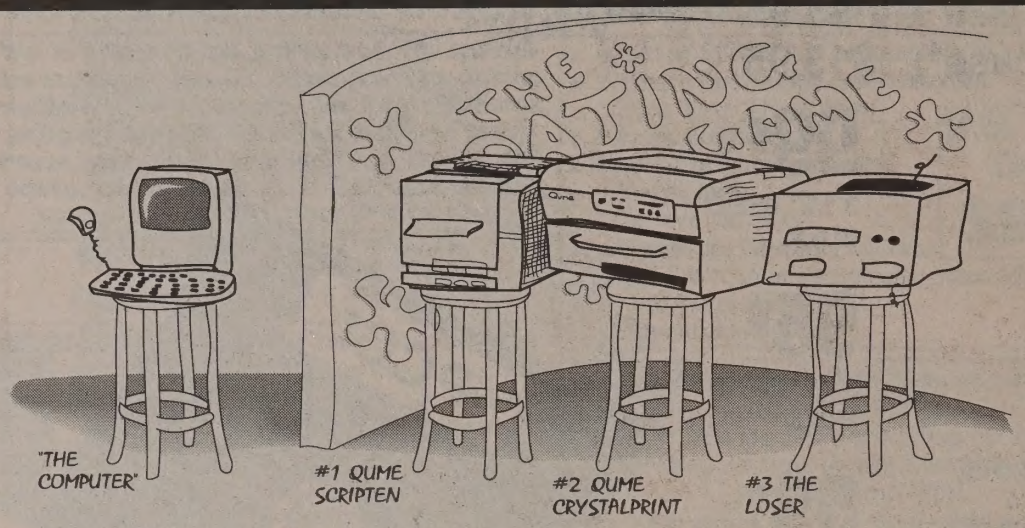

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November 29 - December 2. Troubleshooting Datacomm & Networks: Hands-on Workshop. Los Angeles. Integrated Computer Systems. Call: John Valenti, 1-800-421-8166.

November 29-December 2 Local Area Networks: Implementation & Configuration Course. Los Angeles. Integrated Computer Systems. Call: John Valenti, 1-800-421-8166.

November 29 Focus 4GL/DBMS Seminars. San Fernando Valley. Information Builders, Inc. Call: (212) 736-0842

November 29-December 2 OSI Product Integration Conference. McLean Hilton, McLean, Virginia. Advanced Computing Environments. Call: Wendy C. Gibson, (415) 941-3399.

November 29-December 1 Second Annual Engineering Workstations Conference And Exposition. Los Angeles. EWC. Call: 1-800-HILTONS.

November 30 - December 2 Software Requirements & Design Specifications Course. San Diego. Integrated Computer Systems,1-800-421-8166.

November 30-December 2PC Networking: Hands-on Workshop. Los Angeles. Integrated Computer Systems. Call: John Valenti, 1-800-421-8166.

November 30-December 2 Software Requirements & Design Specifications Course. San Diego. Integrated Computer Systems. Call: John Valenti, 1-800-421-8166.

December 1 Focus 4GL/DBMS Seminars. Los Angeles. Information Builders, Inc. Call: (212) 736-0842.

December 3 Computer Swap Meet. LA County Fairgrounds, Pomona. RK Productions, 1-800-722-7927.

December 3-4 Conference And Exposition of MIDI Music. Sheraton Centre, New York. Tony Scalisi, (203) 259-5734.

December 3 Los Angeles Amiga Users Group Christmas Wish List Show. Culver City. Call: President Rick Smith, (818) 893-5022.

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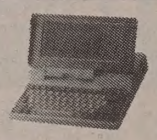

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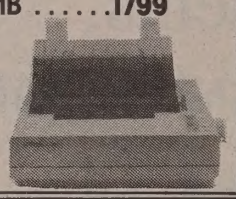

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December 6-9. Effective Skills For Technical Managers Course. San Diego. Integrated Computer Systems. Call: 1-800-421-8166.

December 6-9 Technospace: International Space Industries And Technologies Exhibition. Bordeaux, France. Technospace '88. Contact: Marie-Anne Chambost, 58, rue de la Boetie, 75008 Paris; Tel. : 16. 1 45 63 45 72.

December 6-9 Software/User Interfaces: Design Principles & Techniques Course. San Diego. Integrated Computer Systems. Call: 1-800-421-8166.

December 7-9 Software Quality Assurance & Testing Course. San Diego. Integrated Computer Systems. Call: John Valenti, 1-800-421-8166.

December 8 Professional Publishing With PageMaker On The Mac Short Course. Santa Ana. New Horizons Computer Learning Center. Call: (714) 556-1220.

December 10 Computer Show. San Diego Scottish Rite Center. East West Computer Shows. Call:(415) 388-8893.

December 10 Shop Till Ya Drop Computer Swap. Costa Mesa. Microshows. Call: 1-800-433-7469.

December 11 Computer Show. Glendale Civic Auditorium. East West Computer Shows. Call:(415) 388-8893.

December 12-14 An Introduction To The Computer: From Micros To Mainframes. Los Angeles. American Management Association. Call: Robert Newton. (212) 903-7936.

December 13-14 Timeslips III Seminars. Los Angeles. Mentor Technologies. Call: 1-800-227-5502

December 14 Focus 4GL/DBMS Seminars. Los Angeles. Information Builders, Inc. Call: (212) 736-0842

December 14-16 Software Maintenance Course. San Diego. Integrated Computer Systems. Call: John Valenti, 1-800-421-8166.

December 14-21 Soviet Export Goods Exhibition: Cooperation Through Trade. New York, NY. The USSR Chamber of Commerce and Industry. Call: D. Wolstenholme,(703) 893-4545.

December 15 Professional Publishing With PageMaker On The Mac Short Course. Santa Ana. New Horizons Computer Learning Center. Call: (714) 556-1220.

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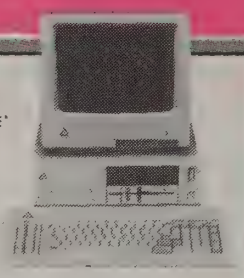

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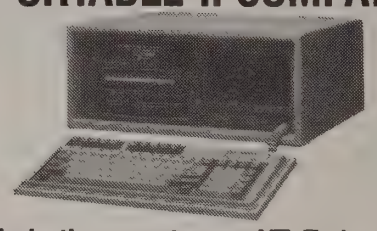

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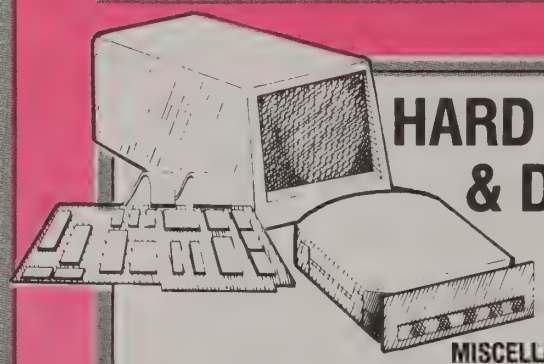

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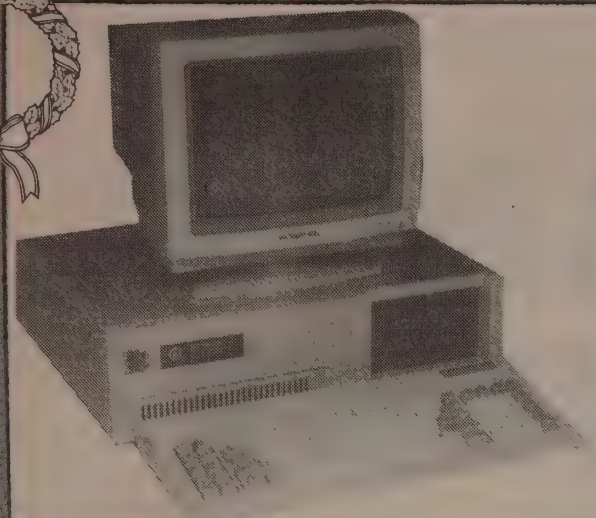

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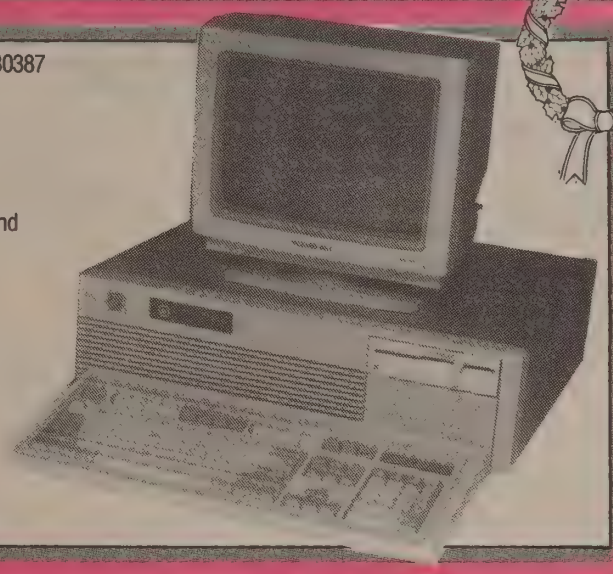

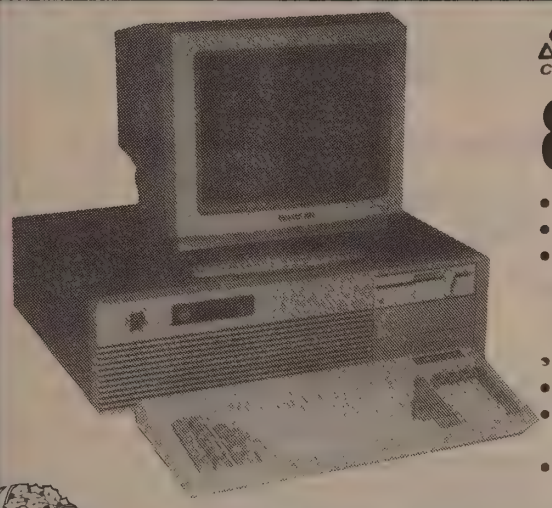

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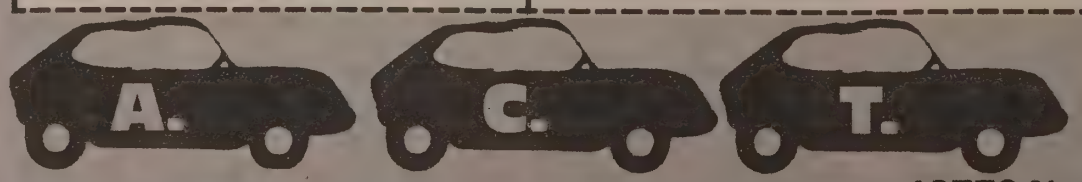

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December 17 Shop Till Ya Drop Computer Swap. Pasadena. Microshows. Call: 1-800-433-7469.

December 18 Computer Show. Ventura. East West Computer Shows. Call:(415) 388-8892

December 19-20 Timeslips III Seminars. San Diego. Mentor Technologies. Call:1-800-227-5502

December 22 Professional Publishing With PageMaker On The PC Short Course. Santa Ana. New Horizons Computer Learning Center. Call: (714) 556-1220.

January 7 Shop Till Ya Drop Computer Swap. Anaheim. Microshows. Call: 1-800-433-7469.

January 10-13 ADA Programming & Software Engineering: Hands-on Introduction Course. San Diego. Integrated Computer Systems. Call: John Valenti, 1-800-421-8166.

January 10-13 Software Project Management Tools & Techniques Course. San Diego. Integrated Computer Systems. Call: 1-800-421-8166.

January 11-13 SC Global '89. San Francisco. Superconductor Applications Association. Call: (714) 586-8727.

January 17 Javelin Intro. Seminar. Los Angeles. Mentor Technologies. Call: 1-800-227-5502.

January 17-19 RISC Systems Architecture And Design Short Course. Los Angeles. UCLA. Call: (213) 825-1047

January 17-20 Microprocessor Software, Hardware & Interfacing Hands-On Introduction. San Diego. Integrated Computer Systems. Call: John Valenti, 1-800-421-8166.

January 18-20 PC Networking: Hands-on Workshop. San Diego. Integrated Computer Systems. Call: John Valenti,1-800-421-8166.

January 18 Javelin Advanced Seminar. Los Angeles. Mentor Technologies. Call:1-800-227-5502.

January 18-20 Reliable Knowledge-Based Systems: Design, Analysis And Testing Short Course. Los Angeles. UCLA. Call:(213) 825-1047.

January 23-25 1988 Optical Disk Systems Conference: From The Mail Room To The Board Room. Phoenix, Arizona. CAP International. Call: Kristin Fischer, Conference Coordinator, at (617) 982-9500.

January 24-27 Structured Design & Programming Course. Los Angeles. Integrated Computer Systems. Call: John Valenti,1-800-421-8166.

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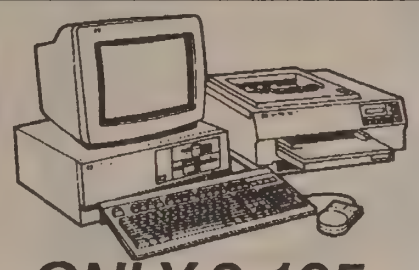

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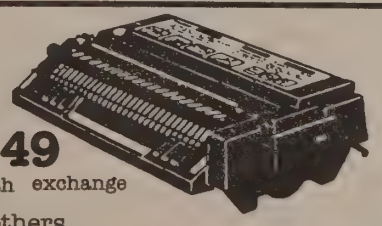

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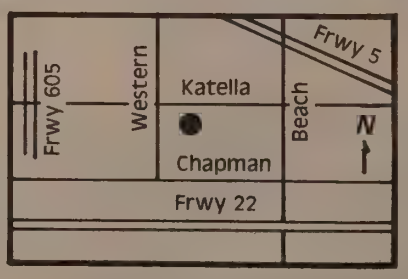

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January 24-27 Microprocessor Troubleshooting: Hands-On Tools & Techniques Course. San Diego. Integrated Computer Systems. Call: John Valenti,1-800-421-8166.

January 30-February 3 USENIX Association Winter 1989 Technical Conference. San Diego. USENIX Association. Call: Donnalyn Frey,(703) 764-9789.

January 31-February 3 Map/Top: Technical Introduction & Implementation. Los Angeles. Integrated Computer Systems. Call:1-800-421-8166.

January 31-February 3 ADA Programming & Software Engineering: Hands-on Introduction Course. Los Angeles. Integrated Computer Systems. Call:1-800-421-8166.

February 1-2 Timeslips III Seminars. Los Angeles. Mentor Technologies. Call:1-800-227-5502

February 5-7 SAFECON-Software And Firmware CONference. San Jose. MultiDynamics, Inc. Call: Anne Weber,(714) 669-1201.

February 7-10 16 & 32 Bit Microprocessor System Design Course. Los Angeles. Integrated Computer Systems. Call:1-800-421-8166.

February 7-10 C Programming: Hands-on Workshop. Los Angeles. Integrated Computer Systems. Call:1-800-421-8166.

February 7-10 Software Project Management Tools & Techniques Course. Los Angeles. Integrated Computer Systems. Call:1-800-421-8166.

February 8-10 Software Requirements & Design Specifications Course. Los Angeles. Integrated Computer Systems. Call:1-800-421-8166.

February 10-11 The 1989 Digital Photography & Editing Conference. Sunnyvale Hilton Hotel, Sunnyvale. Sacramento Bee & The San Jose Mercury News. Call: (408) 738-4888.

February 14-17 Advanced C Programming: Hands-on Workshop. Los Angeles. Integrated Computer Systems. Call: John Valenti,1-800-421-8166.

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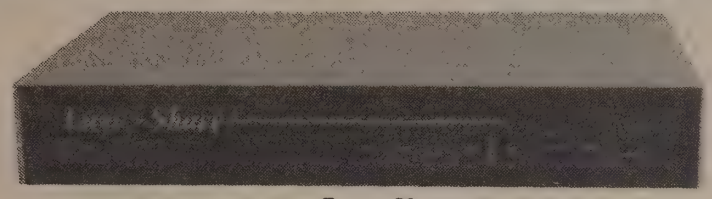

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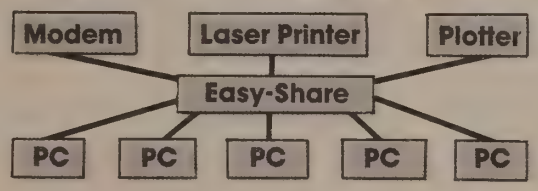

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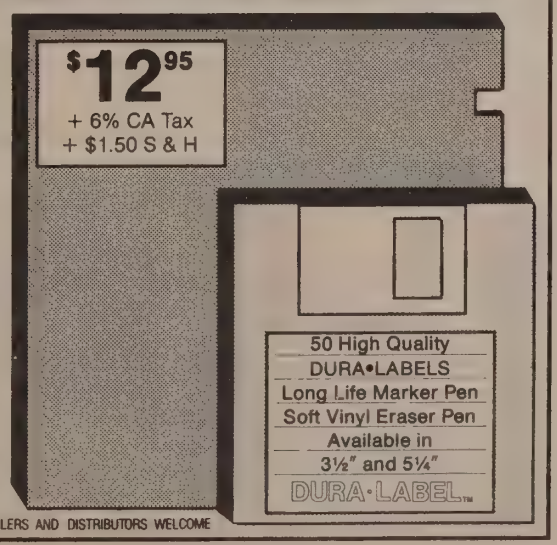

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Paul Hoffman is an industry analyst who has been covering microcomputer technology for ten years. He can be reached on USENET (phoffman@well) and MCI Mail (264-3171). He also writes popular microcomputer books.

The Year Of Waiting

1988 In Review

It may be a bit premature to review the year's microcomputer news before December is finished, but previous years have shown that December is a slow news month because everyone is out buying Christmas gifts and computers as last-minute writeoffs. Still, you never know when a surprise might crop up, especially if you are hooked into a national network. Given how little really interesting news happened this year, it may not be too soon to cut off "The Year of Waiting."

What exciting happened in 1988? Very little, unless you like waiting around. Every industry prognosticator had a different story a year ago about the thrills and chills we would see in 1988. "OS/2 will be ready by the end of the year." "LANs will really catch on." "1988 will be the first year of universal electronic mail." "Steve Jobs will really show up Apple." "UNIX will take off like you wouldn't believe." "Apple will really get its act together, Mac prices will drop and sales will soar." Any of those things might come true in 1989, but they certainly didn't happen in 1988. Given that the market is being pulled more forcefully in different directions by manufacturers, it seems unlikely that more than one or two of those could even come true in 1989. You'll just have to wait.

Waiting seemed to become a major industry pastime in 1988. Waiting for Lotus to put out *1-2-3* release 3. Waiting for Lotus to postpone it again. Waiting for a judge to start hearing any of the half-dozen cases that could change the face of the computer industry. Waiting for the NeXT machine to be released. Waiting for the election. Waiting for clone makers to come out with MicroChannel models. Waiting for some excitement. "Wait until you see our next product: it'll blow your socks off!" Noticing at the end of the year that your socks were firmly in place.

By no means was the industry stagnant. Sales went up for most manufacturers and major computer retailers, sometimes at alarming rates. The old standards, both hardware and software, did very well, and no major companies went out of business. IBM sold lots and lots of computers, and so did Apple. Microsoft updated almost every one of its programs and saw a huge sales increase. The top manufacturers did quite well, and a few small companies did a reasonable job as well. The number of interesting new developments, however, was very small. The most touted ones were almost not worth the waiting.

The two new types of software that became popular in 1988 were "executive information organizers" (like *GrandView* from Symantec and *Agenda* from Lotus) and "desktop presentation software" (like *More II* from Symantec, *PowerPoint* from Microsoft). Both of these categories of software will grow for a while in sales and in competitive packages, but are likely to hit a wall when the small number of executives who want to use a computer to help run their lives or help them speak have bought their software. These are the same people who not only refuse to use the token PC on their desk for anything other than connecting to the mainframe, they are also the ones who continue to limit acquisitions of PCs in their companies. As the industry is learning, executives don't always know what is good for them.

The hardware scene wasn't much better for keeping awake. IBM continued to churn out PS/2 systems with MicroChannel Architecture while the clone makers insisted that IBM's sales figures were inflated. Then, when it became obvious that IBM was really selling a whole bunch of PS/2s (the peripheral board manufacturers could have told you that), the clone makers tell the press that IBM is making it too difficult to legally make a PS/2 clone. So they banded together to create the Extended Industry System Architecture (EISA) and announced that not only was it better than the MCA bus, you had to wait a year before you could get one. More waiting. Then many of the original members of the EISA group quietly announced that they probably would have PS/2 clones out before their EISA systems. Just wait until the middle of 1989.

The number of interesting new developments was very small. The most touted ones were almost not worth the waiting.

The most universally griped-about subject was the high cost and low availability of RAM chips. Thanks to our tariffs (put in place at the request of the US chip makers), the price of RAM went up by more than 600%. Most major computer manufacturers (other than IBM) said that this caused them not to come out with new models this year because users wouldn't be able to afford them. "Just wait until RAM prices go down." Ostensibly, the move was supposed to punish the Japanese and spur American companies to start building more of its own RAM, but neither happened.

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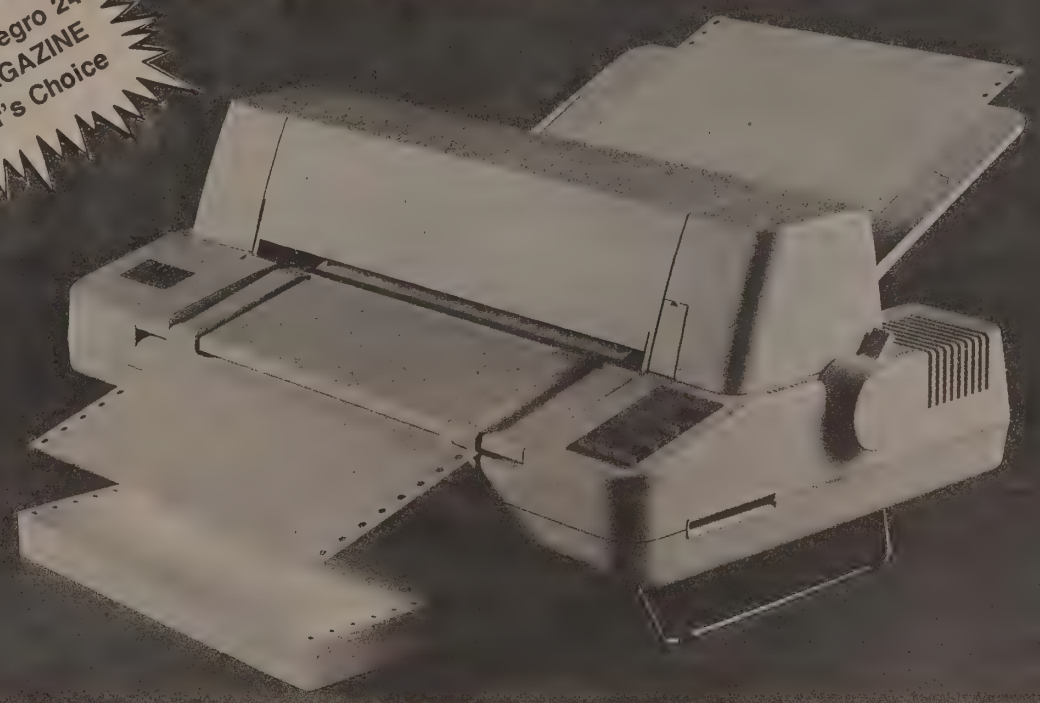

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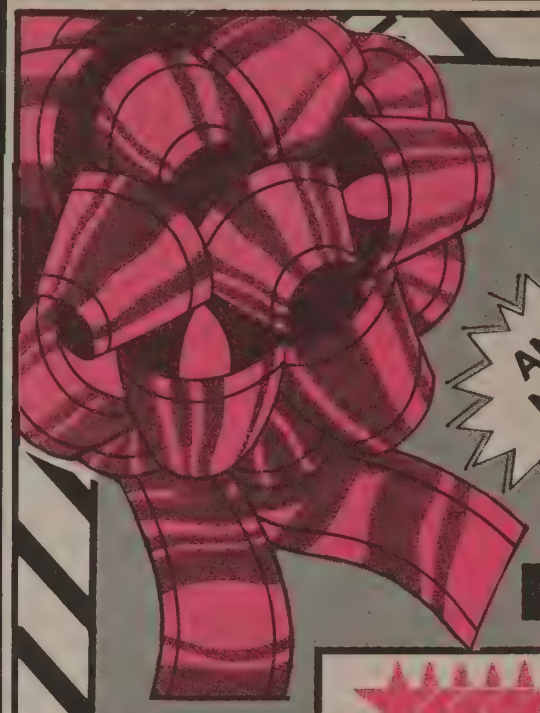

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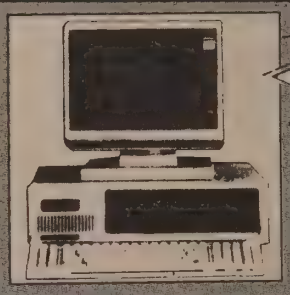

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NEWS AND ANALYSIS

No serious action was taken to overturn the tariffs, so we are still stuck with not enough memory to run the new, bigger programs. OS/2 may be the big loser in the RAM game, since it takes four megabytes to run OS/2 Presentation Manager well.

Who wasn't complaining in 1988? Lawyers, for one. Although they too had to wait for a reasonable ruling on copyright for software, their meter was running so they didn't mind going nowhere fast. Apple sued Microsoft and Hewlett-Packard over the similarity of *Windows* and *New Wave* to the Macintosh. Lotus dragged its heels in its suit against Paperback Software and Mosaic over the similarity of *VP-Planner* and *Twin* to *1-2-3*. Since lawyers are still one of the least computerized professions, they didn't seem to mind the amount of creativity lost due to the suits delays. "Wait until next year: we'll have something definite by then." The most definitive case to be tried, between Intel and NEC over the copyrightability of chip instructions and microcode, was abruptly halted when the judge was discovered to have a tiny amount of Intel stock. The case is being retried.

From the press releases being churned out by the public relations industry, you'd think that this was the best of times. It is hard to imagine how many trees were killed for some of the announcements that were made and five copies sent to each computer magazine in the country. A new trend in product announcements is the "dual announcement." A few months before the product is really ready, announce it with a future ship date. Then, when you are actually beginning to ship the product, announce it again. The idea of the first announcement is to generate demand while the end users wait around for the testing to be finished. The second announcement can usually be translated as "we think there are few enough bugs to not catch too much flak in the newspapers and we're mailing out the boxes now."

Another forest was slaughtered for press releases and photos of who got promoted to vice president of every uninteresting company in the country. Literally thousands of such letters go out each year, usually accompanied by a photo of an indistinguishable white male in a suit. Somehow, this is supposed to signify progress in the industry, that there are more and more vice presidents every month, but it is more indicative of the waste inherent in the public relations process. Since no one is generating much excitement with their new products, the PR people have to send out something.

The most interesting stories of the year were not the things that you read in press releases. Much to the dismay of many companies, news happens outside of what they can control. Although product announcements did make some headlines, they were in the minority. The most interesting news stories of the year were:

•SQL became the most-used buzzword in the database industry. Most major database management packages have switched to, or are moving rapidly towards, being able to produce queries in a standard fashion. This means that it is more likely that systems from different manufacturers will be able to work together in the future.

•AT&T bought 20% of Sun's stock. This riled many of Sun's competitors, especially those who feared that Sun's previous deals with AT&T gave it an unfair advantage in the UNIX market. After the purchase announcement, 16 manufacturers officially protested the move, although AT&T pretty much ignored their complaints.

•Apple released its A/UX UNIX-based operating system for the Mac II. After almost a year, however, very few people have had a chance to purchase it, and it does not live up to the early promises of compatibility with regular Mac software.

•Apple sued Microsoft and Hewlett-Packard over their use of the Macintosh user interface. The case revolves around the still-murky question of whether or not it is all right to emulate the way a piece of software appears to a user and the way the user interacts with it. Apple claims that Microsoft *Windows* and Hewlett-Packard's *New Wave* operating environments look and feel too much like a Macintosh to be legal; of course, Microsoft and H-P disagree. To date, courts have come out with conflicting rulings on what is and is not allowed, so the ruling could go either way.

•The U. S. signed the Berne Convention on copyrights, which could change the way that software copyrights are enforced in the future. Part of the Berne Convention states that the US must protect the "moral rights" of authors over their works. This could affect the look-and-feel cases now pending, since the uniqueness of the look of a piece of software could fall under the moral rights concept.

•IBM and many other UNIX vendors joined forces to wrest control of the UNIX standard away from AT&T. The Open Software Foundation (OSF) will produce its own version of UNIX and utilities, and will set a standard for how software vendors can produce programs that work on all OSF-compliant machines. Supporters of AT&T followed suit a few months later by forming their own group to promote the next release of UNIX from AT&T.

•Apple angered many of its customers by raising its prices by about 15%. To make matters worse, Apple claimed that it did so not only because of higher RAM prices, but because they felt that people could afford it. The price increase also hit their popular LaserWriter IINT and IINTX PostScript laser printers.

•Steve Jobs released the first computer from his new company, NeXT. The single-user computer is aimed at the higher-education market, and sports many features unavailable on current computers. The $6,500 system includes a super-high resolution screen that can display text and graphics better than most current monitors.

Who wasn't complaining in 1988? Lawyers, for one.

•IBM and Microsoft released the Presentation Manager for OS/2. This user interface gives a standard method for interacting with OS/2 programs. Although not many people are using OS/2, Presentation Manager will make it easier for software developers to market OS/2 software, since buyers will be assured that it will meet the standard IBM interface.

1989 may be more exciting than 1988, but it will probably involve just as much waiting. Apple or any of the clone makers could come out with more exciting machines. Some software company may be working on the next *1-2-3* that will become instantly useful to millions (or tens of millions) of people. Companies may come off their high horses and start really making it easier to network. One of the many lawsuits may give a clear indication of how the industry should deal with copyright. On the other hand, we might have to wait many years for any of the above.

IBM/Microsoft Ship OS/2 Presentation Manager

The ghosts and goblins of the microcomputer industry were out on Halloween this year. In a joint announcement, Microsoft and IBM released OS/2 Presentation Manager, a product they announced 18 months ago. Presentation Manager is the graphical user interface for OS/2, and it closely resembles Microsoft's *Windows* package for the IBM PC, which in turn closely resembles the Macintosh user interface.

In recent years, some product releases have been made when the products were not actually ready; to prove that this was not the case with Presentation Manager, finished copies of the program were handed out at the press announcement. Despite widespread skepticism that they could make it on time, the shipping package seems stable and performs as Microsoft has been telling the industry that it would.

The product, officially called OS/2 version 1.1, gives users a consistent interface for programs running under OS/2. Like the Macintosh interface, it also gives developers a clear set of guidelines for how their programs should look. As promised, it looked almost identical to Microsoft *Windows*, and many *Windows* developers (as well as main-line MS-DOS developers) were at the announcement showing working products and preliminary versions running under OS/2 with Presentation Manager. Large companies who have been plagued with late products such as Ashton-Tate and Lotus, however, had nothing to show at the convocation, but insisted that they were 100% behind OS/2. Others who displayed working programs include MDBS, Inc., who showed their *Object/1* application generator, and Micrografx, who showed their *Mirrors* technology for porting *Windows* programs to OS/2.

Presentation Manager gives IBM a friendly user interface for their low-end systems that can conceivably be ported to higher-end systems. At the press conference, however, both IBM and Microsoft were cagey about how OS/2 with Presentation Manager will affect other operating systems that they market, especially XENIX. Although IBM

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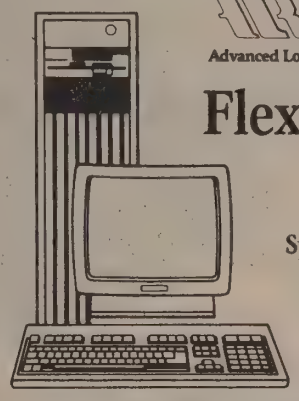

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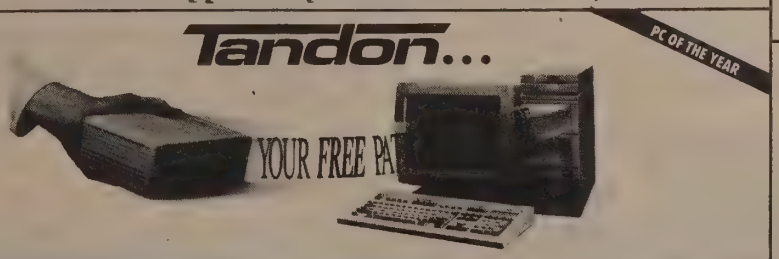

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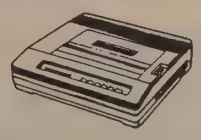

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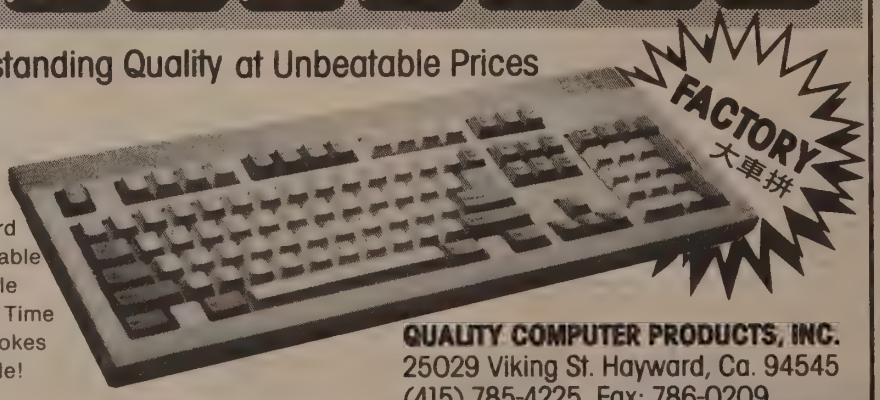

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NEWS AND ANALYSIS

keeps stressing that Presentation Manager is a key part of its Systems Application Architecture (SAA), it hasn't revealed whether the same user interface will be available on systems other than OS/2. Since the original version of OS/2 has sold very poorly so far and very few significant applications have been released, the companies hope that the release of the better user interface will spur interest and corporate sales.

Also, very few monitors and printers are supported by the released version of Presentation Manager, forcing some users to wait until hardware manufacturers can write device drivers (which are more complicated under Presentation Manager than they were under *Windows).* Also, since OS/2 1.1 takes at least four megabytes of memory to perform well, many potential buyers are holding off until memory prices drop significantly.

AT&T-Aligned Vendors Counter OSF

UNIX vendors who remain true to AT&T over the course of UNIX development formed their own group last month to blunt the effectiveness of the Open Systems Foundation (OSF). OSF was formed in order to wrest control of the destiny of UNIX away from AT&T and Sun, who AT&T had made a major player in UNIX development. The new group, which is still without a name but is working as "the Archer Group," is composed of the largest UNIX hardware vendors (NCR and Unisys), as well as many smaller hardware vendors from around the world and some software vendors. One of the main purposes of setting up the Archer Group was to get more positive publicity for the forthcoming Release 4 of AT&T's UNIX, according to its sponsors. Also, since many UNIX users were scared that the OSF UNIX might take many years to put in place, UNIX development might be stymied.

Archer Group members stressed the difference between the Archer Group and OSF by pointing out that the Archer Group would not do any engineering. Instead, they want to create standards for Release 4 software and give AT&T a better method for talking to its vendors. Some large manufacturers have complained that AT&T has not been honest with its vendors about its future plans, but that the formation of the Archer Group will help because AT&T can coordinate its schedule with a single group. The membership is open to all UNIX vendors, they stressed, and it is likely that some of the companies who initially joined OSF will also join the Archer Group.

The two camps took shots at each other, both accusing the other of having an inferior product. The most likely outcome of the mutual bashing is that UNIX growth will be curtailed and that neither side will be able to sell as many UNIX-based systems. The most likely winner in such a situation is IBM, one of the OSF founders, since it already does so well with its proprietary operating systems.

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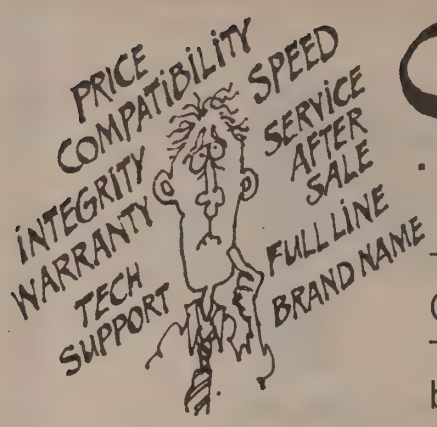

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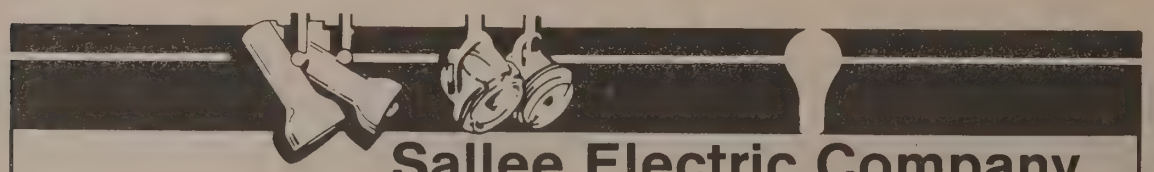

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NEWS AND ANALYSIS

Chip Industry's Year-End Problems

Most of the news from the chip industry last month was pretty bad, by all accounts. The Semiconductor Industry Association (SIA) said that it expects sales of chips to be low for quite some time, and that its indicator of sales hit its lowest point in three years. National Semiconductor said that it would suffer a significant loss during the quarter, mostly due to soft demand for the specialized chips that it makes. Then, to drive the point home, Advanced Micro Devices, on of the largest chip makers in the area, announced that it would lay off 1000 of its workers in January. AMD blamed the 10% reduction in its US workforce on slackening demand for the 80286, which it produces under a license from Intel. Both companies merged with other chip makers earlier in the year, and thus have a great deal of extra manufacturing capability that needs to be cut back.

AT&T Wins Huge Air Force Contract

In one of the largest contracts ever awarded by the government, AT&T won what could be worth $1 billion in business over the next five years. The contract breathes new life into AT&T's floundering 3B2 series of minicomputers and network software. The Air Force will use the computers purchased on the contract mostly for standard business work and software development. The contract, which required UNIX as the operating system for whichever computer was chosen, was the subject of intense interest in the computer community due to its size and scope. AT&T will be able to pitch systems like the one it sets up for the Air Force on other contracts and will gain a larger software base for the 3B2 series.

Adobe Introduces DEC, IBM Products

Trying to make as big a splash in corporate computing as it has in microcomputers, Adobe recently announced agreements with DEC and IBM that make PostScript available to users of large computers. Adobe's downloadable typefaces will be available for VAX computers running VMS that are hooked to DEC's PostScript printers. The typefaces released include the fonts currently available internal to most PostScript printers including the Apple LaserWriter II family.

In its announcement with IBM, Adobe showed its PostScript interpreter running on a mainframe under the VM/CMS operating system. Users can print on many of IBM's graphics printers, since the interpreter resides in the mainframe. This move opens up a very wide market for Adobe, which has until now focused almost exclusively on the microcomputer and small mini-computer market.

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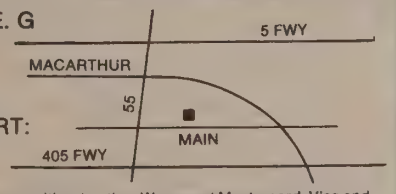

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NEWS AND ANALYSIS

New Version Of Microsoft Word For PC

Microsoft announced that version 5 of *Word* will include many desktop publishing features, such as true what-you-see-is-what-you-get editing and full graphics integration into documents. It also includes heavy network support, including better facilities for document review by a group. *Word* version 5 will run under OS/2 version 1.0 (without Presentation Manager) and will take full advantage of the extended memory and process switching under OS/2. The new version will be released at the end of the year, according to Microsoft. Microsoft will market *Word* aggressively against *WordPerfect*, which continues to hold its strong lead in the PC word-processing market.

Calamity On The Internet

Thousands of computers on a national network were slowed to a standstill by a program that chewed up system resources by performing useless tasks and reproducing itself on other systems. As covered in Bennett Falk's UNIX column this issue, the program ran amok on the network by taking advantage of an obscure hole in the mail facility of some UNIX systems. The program belonged to a class of programs called "worms." A worm tries to keep itself alive while crawling through a system, in this case through the Internet network which links universities and Defense Department contractors. Like the more well-known "virus" programs, this worm reproduced, although it passed itself from site to site through a single common break in security.

The national media picked up on the story immediately and, in a surprising display of accuracy, covered many of the related security issues as they described the program and the problems it was causing. After all of the systems on the research network rid themselves of the worm and closed the security hole, many also strengthened their day-to-day security measures. The worm has rekindled a dormant security debate in the computer community, namely how secure networks are. As widespread as the worm was, it only affected Sun and DEC computers on one network, and it did not try to directly damage systems. A more insidious program could have caused much more widespread damage.

Smalltalk Comes To The Mac

Digitalk, the manufacturer of the most widely-used Smalltalk language implementation for the IBM PC, has just released *Smalltalk/V* for the Macintosh. Since many of the parts of the Macintosh interface were picked up from the popular versions of Smalltalk from the early 1980s, it could be said that the language is coming home. Digitalk made it easy to directly port existing *Smalltalk/V* programs to the Mac so that the existing installed base of programs will be available on the Macintosh almost immediately.

continued

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REALIZABLE FANTASIES • BY JIM WARREN

Big Budgets, Better Home Phones, Multi-Use Monitors And Memorable Mirrors

This technojunkies' talk-show offers digital daydreams—"fantasies" only because someone's not implemented them. So—do it!

A Nation's Real Game

To prove(?) how easily we could do what Congress and the White House can't do, we need this game!

It seems that the National Economic Commission has developed a budget-balancing computer "game"—but this is a "real" game for the Washington moguls to use. The NEC is a panel established by the federal legislative and executive branches to propose a deficit-reduction plan for the next administration.

Well, I think they should release this game/model/mega-spreadsheet for use by the people who are paying for it. Of course, *we* know how to balance the budget and cancel the deficit—we just tax less while providing more services we want. For an interesting writeup describing the game and some of the problems, read "The Deficit Game," an October article by the *Washington Post*'s Paul Blustein.

Consumer Phones With Commercial Phone Capabilities

Many of us have all sorts of features and options on our computer gear, our video gear and our audio gear. But although we may have multiple phone lines, our residential phone systems don't make it.

There should be reliable home phone systems—priced for consumers—that allow multiple trunks (phone lines) and multiple stations (any of the normal phones found in a home). By using the digits "#" and "*," any user at any station should be able to place an incoming trunk call on hold, forward it to another station, dial any other station, attach or detach other stations from a shared call, redirect all calls for one station (e.g., the den) to another station (e.g. the refrigerator), direct any trunk to ring on any one or several stations, etc.

They should also be able to dial up a listening station (e.g.,, next to a baby's crib or inside an insecure distant garage), or patch into a paging circuit feeding a low-power amp connected to some paging speakers hither and yon.

These are only a few of the options available in small commercial systems—that are wildly overpriced for the technology and components they contain.

Copyright © 1988 by Jim Warren. All rights reserved. *Jim Warren founded the West Coast Computer Faire, the* Silicon Gulch Gazette *and* Infoworld *newspapers, Video Initiative and the DataCast proposal for broadcast-based paperless electronic newspapers utilizing personal computers. He was the founding host of the PBS* Computer Chronicles *series, founding editor of* Dr. Dobb's Journal, *and founding president of the Microcomputer Industry Trade Association.*

Please note that, although this is user programmable—hopefully, very programmable—it does not require a general-purpose [micro]computer. Equally important: It allows consumers to use any of the available handsets ("phones") they desire. It's simply a box that listens to Touch-Tone bleeps and/or rotary-dial pulses—which it may treat as switching commands or pass through to a phone trunk or other "output" line.

Which reader will be first to make a fortune in this massive consumer market?

Intelligent Listeners

Pete Maclean of San Francisco proposes additional phone phantasies:

Let's have phone answering machines similar to traditional answering machines, but with a computer interface or two. They would allow users to download control sequences and [un]digitized outgoing messages (e.g., messages that automatically change during the day or week). It would also allow callers knowing Touch-Tone command sequences to access different messages, stored voice-mail, etc.

Incoming messages could be digitized and fed to the computer (for *HyperCard* processing?) and stored as home computers' voice-mail (disks permitting).

Now, Pete's best suggestion: Have this intelligent answering machine briefly beep like it was an auto-answer modem. If it heard a computer beep back, it would transfer the call to the owner's computer modem port; if it heard a fax machine's signal, it would transfer the call to the fax port; other calls would be presumed human.

Mirrors With Memory

Motorized automobile mirrors should have memory, according to Bob Richey of Concord, California. Then, they could adjust themselves to different drivers—as any modern machine should.

May as well have car seats do the same thing—in which case users should be able to identify themselves upon opening the door, so tall folks can conveniently readjust seats that short folks have squished forward.

Multi-Sync Monitors' Multi-Uses

OK—So many computer monitors now adjust to several different form factors, e.g., VGA, EGA, CGA, etc. These produce outstanding high-resolution color images. Some even permit control over the shading and brightness of each pixel.

So, its time to add an optional television-signal tuner-receiver. It should receive a regular television broadcast signal, convert and adjust it to one of those hi-res monitors' better form factors—with line averaging, scan buffering and interleave unwinding, as needed—and output a signal in a form the monitors can accept. That way, computer folks who prefer their escape literature in video form rather than printed form can use their big, expensive, hi-res monitor to view computer gibberish and television gibberish.

There should be reliable home phone systems—priced for consumers—that allow multiple phone lines and multiple stations. By using the digits "#" and "*," any user at any station should be able to place an incoming trunk call on hold, forward it to another station, etc.

Quickies

Mark Gunther, the General Manager of MIX Publications, suggests foot switches—on the left for the "Ctrl" and "Alt" keys, and on the right for mouse clickers.

Jim Lyle of Campbell suggests there should be a CBBS—computer bulletin board service—providing multiple listing services for used cars. Perhaps it could even offer multiple cross-indexing by make, model, price, alleged conditions, geographic area, etc.

[Jim also wants spoon-shaped tortilla chips, sturdy enough to lift salsa and veggies—but I can't figure out how to justify including that in a computer column, so you are to skip this sentence.]

Mental Wandering: Why, Daddy?

Psychological researchers, please explain:

Why are so many engineers morning people and so many programmers night people?

Why are so many programmers so enchanted with double entendre, adventurous alliteration, and wildly wandering word-warping? It's creative symbol manipulation, but is there more to it? (Why, yes, I'm a programmer—how'd you ever guess?)

Fellow Fantasizers—Do!

Send suggestions to Jim Warren, Realizable Fantasies, 345 Swett Road,Woodside, CA 94062. Published proposals will be attributed to their authors unless anonymity is requested. □

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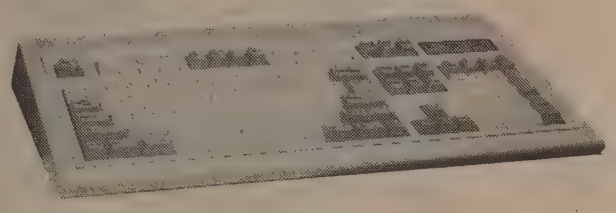

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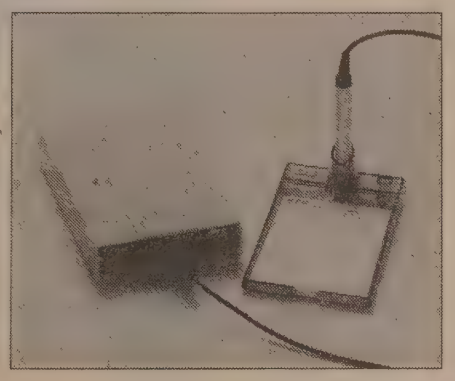

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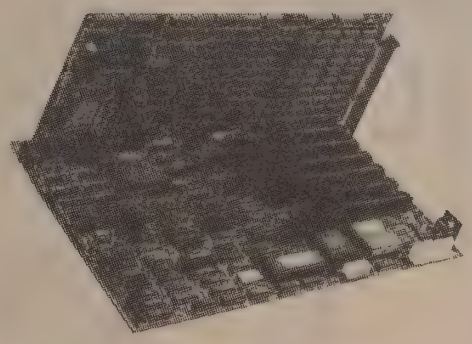

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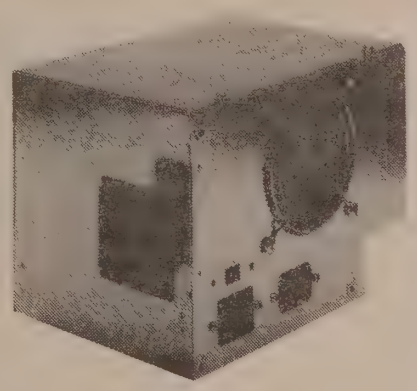

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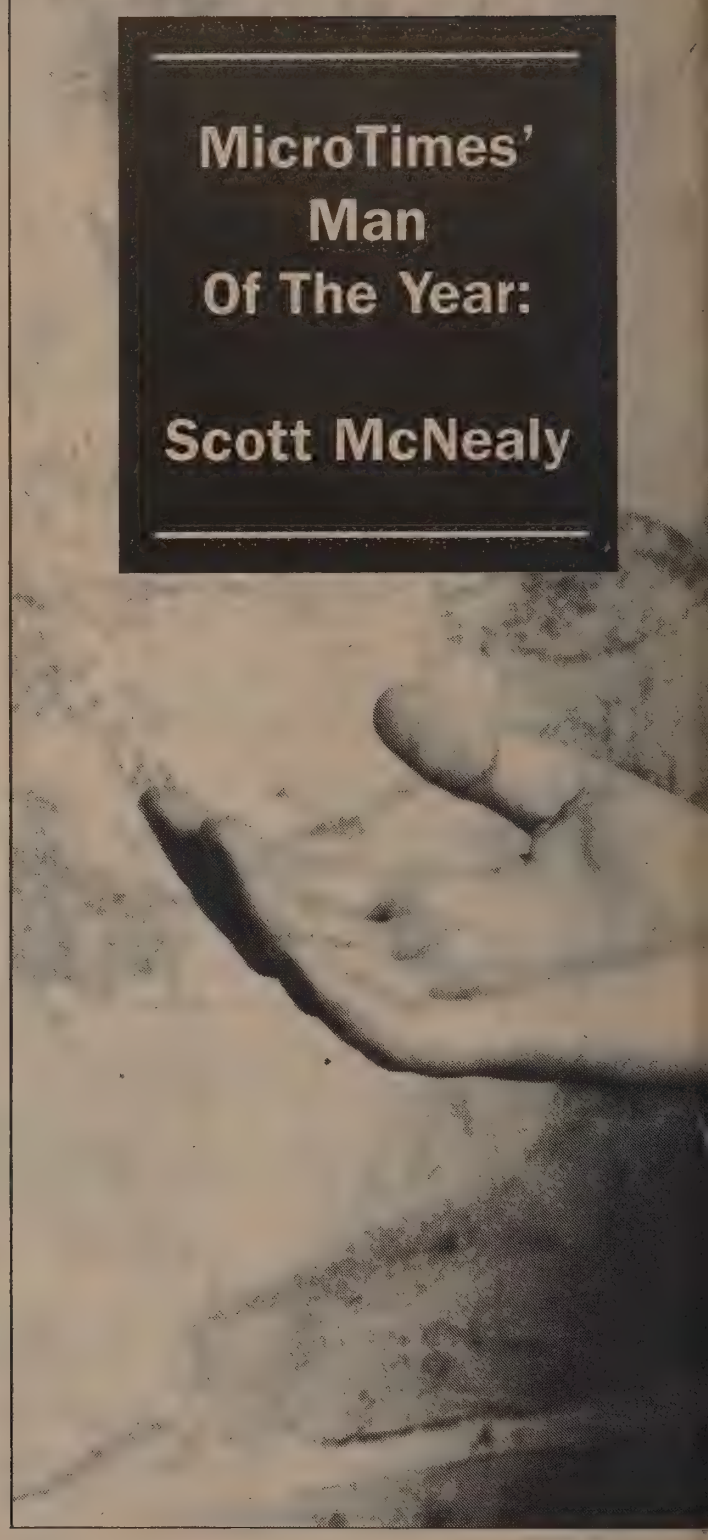
The World According To Sun

President/CEO Scott McNealy Sets The Record Straight

By Mary Eisenhart and Steve Guttman

Photo: Michael Jay

MicroTimes' Man Of The Year: Scott McNealy



A typical problem that people have when they work with other people is that they're afraid that people will steal part of their revenue. It's sort of like being a little kid and wanting to eat everything and not sharing. But that's how you make friends, and friends are useful, in that business is really done on the basis of personal and business relationships that work well.

—Bill Joy

There has been a severe "disconnect" between what computer customers want and what most computer vendors are willing to sell, creating an extraordinary opportunity for Sun and others to respond.

With 99 percent of the general-purpose computer market still untouched by Sun, our employees recognize that far greater challenges lie ahead.

—1988 Annual Report, Sun Microsystems

It would be easy to accuse Sun Microsystems of delusions of grandeur, if it weren't for its impressive track record. It would be easy to accuse its leaders of arrogance, considering their penchant for taking potshots at the rest of the industry, if it weren't for the fact that they're often merely pointing out the emperor's unclothed state. The sweeping statements to which Sun executives are so partial suggest less a company on a mission from God than a company which can't quite figure out why the rest of the industry doesn't do something which obviously *works*. Especially since Sun people seem to be having so much *fun* all the way to the bank...

In 1982, Sun Microsystems was founded with $4 million in venture capital by hardware innovator Andreas Bechtolsheim (whose work on the Stanford University Network gave the company its name), software wizard Bill Joy (one of the primary architects of Berkeley UNIX), Vinod Khosla and Scott McNealy. Their plan, as Joy told *MicroTimes* last year (Issue #34, August 1987) was "to build a full-fledged computer company based on microprocessor technology."

This year Sun, which has roughly doubled its earnings every year of its existence, had its first billion-dollar year. Its phenomenal growth has been spurred by an obsession with technical excellence coupled with fundamental principles: adherence to industry standards, open architecture and cooperation with outside vendors. Part of Sun's commitment to openness and strategic alliances undoubtedly arose from the ingrained "Live Free Or Die" philosophy of UNIX itself, which came into existence in response to monolithic computer companies who locked customers into using proprietary hardware and software from the same vendors; under UNIX, if you didn't like the job Company A's machine was doing for your business, it was an easy matter to buy hardware from Company B which ran the same software.

Another part arose from what Sun regularly insists is no more than common sense. Any Sun presentation is likely to culminate with a variant on standard Sun themes: companies dependent on proprietary technology are doomed; adherence to industry-wide standards and cooperation among vendors insures prosperity for all concerned.

Not only is Sun currently experiencing megagrowth, it's spent the last

year positioning itself for an even more spectacular future. In the connectivity area, it's continued to develop and support TOPS networking technology, which it acquired last year and which allows Macs, PCs and UNIX machines to exchange files on a network. Following last year's dramatic price reduction of its 3/50 workstation, which had the effect of giving a whole new range of options to the would-be Mac II or 386 buyer, it introduced the phenomenally successful 386i, which runs DOS applications in a window within a UNIX environment. The 386i was also a first for Sun in that it was based on Intel's 80386 microprocessor, in contrast to its historically Motorola-based product line.

Sun also introduced a line of high-end workstations, the Sun-4 series, based on its own implementation of RISC (Reduced Instruction Set Computing) technology. Called SPARC (Scalable Process ARChitecture), the standard has been adopted by several leading chip manufacturers and stands a good chance of becoming predominant in the RISC arena.

In what may be the most significant move of all, Sun also announced a major strategic alliance with AT&T, under which the two dominant varieties of UNIX, Berkeley and AT&T's System V, would be united in a single standard to be known as V.4. Further, in a move perceived as a direct threat to Apple, which was hard at work trying to get the Mac interface to work with A/UX, and Microsoft/IBM, trying to bring OS/2 and Presentation Manager from the realms of vapor, the two companies announced a joint venture in developing yet another windowing interface: Open Look (see "AT&T Opens The Windows," *MicroTimes* issue #44, June 1988). Based on Xerox PARC graphical-interface technology, Open Look promises to deliver intuitive ease of use combined with the power of UNIX.

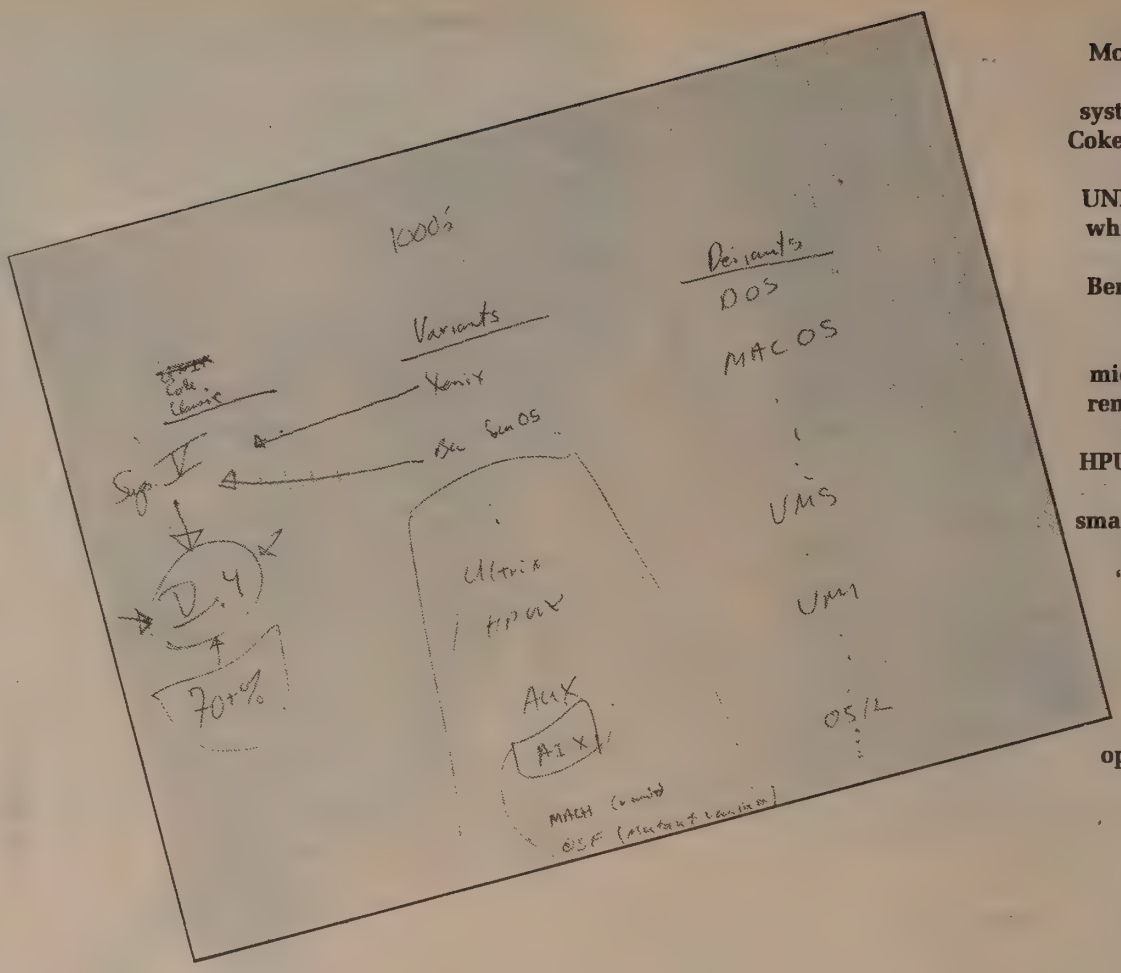
While the alliance offered obvious advantages to Sun and AT&T and promised to make life easier and more productive for their customers, it brought howls of outrage from hardware vendors like IBM, DEC and Hewlett-Packard, who license their own UNIX dialects from AT&T and perceived it as giving the two companies a virtual monopoly in the UNIX marketplace. The upshot of this was the formation of the Open Software Foundation, a group of hardware vendors who committed themselves and their resources to the development of an alternate UNIX standard, to be based on IBM's AIX. There ensued something of a scramble for market- and mindshare among software vendors as OSF tried to convince them to develop applications for its environment rather than V.4. Subsequently, vendors loyal to the AT&T-Sun standard formed their own support organization, still unnamed but currently calling itself "The Archer Group." (See News and Analysis, this issue.)

Sun, meanwhile, continues on an aggressive pursuit of excellence, spending 13% of its revenues on research and development, compared to the 8% industry average. "At any time," says McNealy in the 1988 Annual Report, "Sun may have dozens of widely varying R&D projects under way, occupying well over a thousand engineers."

*****

The 33-year-old son of an American Motors vice president, Scott McNealy has been president, chairman and CEO at Sun for most of the company's existence. His credentials include a degree in economics from Harvard and a Stanford MBA; he's at once an effective executive in whose presence AT&T honchos tend to be positively deferential and a fun-loving golf and hockey enthusiast who remains Sun's chief cheerleader.

An animated speaker, McNealy tends to make his points forcefully and with an utterly Sun-like sense of "Isn't it *obvious*?" When we got to talking about the AT&T alliance, he reached for a tablet and scribbled a diagram of the current state of the UNIX market, with a glorious future for V.4 UNIX and trouble ahead for obscure variants like OSF and the Mach operating system of the NeXT machine.



McNealy's diagram of the operating system world: in the Coke Classic column, AT&T System V UNIX, the standard, which will incorporate XENIX and Berkeley UNIX/Sun OS into the V.4 standard. In the middle column, the remaining variants, including Ultrix, HPUX, and A/UX, to say nothing of smaller variants like Mach and the "mutant variant" OSF. And finally, in the Deviant column, all those other operating systems, most of them proprietary: DOS, Mac, VMS, OS/@, etc.

Given Sun's performance the past few years, there's a pretty good chance he's right.

Just to review some ancient history, how did you get involved with this gang of 8000 anyway?

The whole genesis of the thing basically started with a couple of engineering projects funded by universities and government grants. One was Andy Bechtolsheim's work on the Stanford University Network and Sun workstation, and Bill Joy's work for DARPA on the Berkeley version of UNIX. And then we had a couple of business school students that became close friends, myself and Vinod Khosla. Vinod was out looking to go do a startup; he met up with Andy and said, "Let's go make a computer company out of this."

I was, at the time, director of operations for Onyx, which was a company making UNIX minicomputers in the Valley. The two of them came over and visited me, and I said, "Well, let's go talk to this venture capitalist." One thing led to another and pretty soon Vinod said, "Well, you're going to quit your job, aren't you?" I said, "I'm getting paid lots of money—why would I do that?" He said, "You can't back out on me now!" So really, with no more than about 24 hours' thought, I quit my job, joined them, and we went up and recruited Bill Joy from Berkeley. That was back in the February - March time frame of 1982. The rest is history, I guess.

Open architecture is important to

Scott McNealy of Sun: "If you look at the two fastest growing computer companies ever in the history of the world, it's Compaq and Sun, both of whom are dedicated to building cloneable computers."

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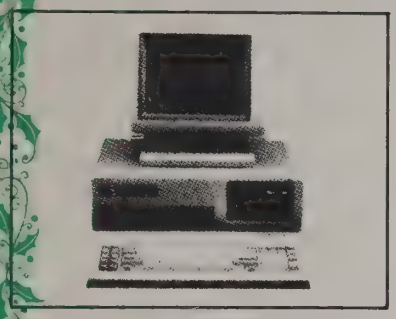

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- EGA upgrade (640x350) . . . . . .add 360
- NEC II Multisync Monitor w/VGA card . . . . . .add 680
- 360 KB floppy disk drive . . . . . .add 65
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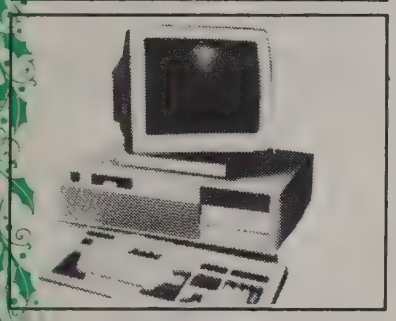

286 SYSTEM: $1475

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- 40 MB ST-251-1 (28ms). . . . . .add 130
- 40 MB ST-251 hard disk (39ms). . .add 95
- 360K floppy disk drive. . . . . .add 65
- 720K floppy disk drive. . . . . .add 89
- 1.44 MB 3½" floppy disk drive . .add 110
- VGA upgrade . . . . . .add 680

XT SYSTEM: $1125

- 4.77/10 MHz
- 512K RAM on board
- 1 360K floppy drive
- 150 watt power supply
- Monochrome/graphics card
- 2 parallel ports
- 1 serial port (second optional)
- 1 game port
- Socket for math co-processor chip
- Clock/Calendar
- XT slide-in case
- AT enhanced keyboard
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- EGA upgrade (640x350) . . . . . .add 360
- 360K floppy disk drive. . . . . .add 65
- 720K 3½" floppy disk drive . . . . .add 89

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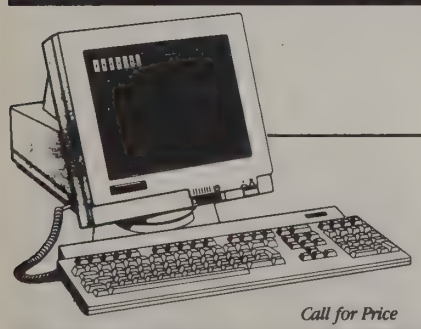

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Sun; how does that affect the way you compete in the marketplace?

Well, I came from the automobile industry, where if you bought a Ford, you didn't have to buy a Ford for your next automobile. You really locked the customer in through customer satisfaction, and reliability and quality, and price/performance, and marketing, and styling and distribution channels — all those other things. You didn't lock them in to the way the car operated, or the kind of fuel it used, or the roads it drove on.

If you go back to the '82 - '83 time frame, a lot of computer companies were complaining because their computers wouldn't talk to other computers, and they were all confused that no one vendor could supply the whole range from bicycle to Boeing 747 in terms of their communication needs. And there's an absolutely fundamental shift that's going on in the computer business. If you look at the two fastest growing computer companies ever in the history of the world, it's Compaq and Sun, both of whom are dedicated to building cloneable computers.

Doesn't that mean that you have to stay a couple of steps ahead of your competition?

Just like Ford! Ford is a wildly successful company. And I hope to be that "unsuccessful" and face those kind of competitive pressures someday. I hope to be that big someday.

I'll tell you what—you can't go very long in any industry, any place, anywhere, and not be a couple of steps ahead of your competition in price/performance, quality, reliability, distribution, marketing, all of those things. People are always looking for that magic little business where you don't face competition and you can make wild, crazy profits. It doesn't exist! There's no free lunch!

"We have a saying around here: 'Goals only limit you.'"

I appreciate your asking that. That's always the classic response to, "Well, so you're building cloneable computers, aren't you going to have to face competition?" Compaq has more than faced it, and their products are much more cloneable than ours; much more cloneable than an automobile. You can build a Compaq clone; in about six weeks you can be shipping. You can't do that with an automobile.

Does that mean that one of the primary dimensions that you're competing on is technology—staying at the forefront?

We're spending 13-, 14-, even as much as 15% of our sales dollars on our R & D budget to build new, better, faster, smaller, more capable, state-of-the-art machines. That percentage is far above the industry average in terms of investment in new product and new technologies.

You said that you'd like to be as big as Ford someday.

Well, that's already taken out of context. I just used it as an example. It's not a goal. We have a saying around here: "Goals only limit you."

It would be highly misrepresentative of the company to put a statement up that says "Sun wants to be this big," or whatever. What Sun really wants to be is respected, successful, highly ethical, a fun place to work. The kind of place where you're proud to go to the outside world and meet some of your friends, and they ask you where you work, and when you say, "I work at Sun Microsystems," they go, "Oh, wow. That's neat." That's a more important goal here. I think a by-product of that is growth, profits and all the rest of it.

At the same time, the growth and the profits create their own problems in a way. It's easy to hold onto that edge when you're a small, little guerrilla company, but when you're taking over Mountain View...

I don't know how to deal with it! You can't win with the world, right? You go be open, and you get a chance to lose, and people say, "Well, now you might lose to the clone manufacturers." You grow, and now they go, "Oh gosh, now you've got growth problems."

Well, I'll tell you what. I'd rather be wondering where I'm going to get my next person as opposed to wondering who I'm going to lay off, or what project I'm going to cut because we're *not* growing. So, you've got to pick and choose your problems. We happen to think that growth and being able to lose are much better problems than being totally locked out. If you look at a company like a Data General, there's one built on proprietary architectures that doesn't even get to lose. And they're facing the other problem — not the problem of growth.

But take, for example, Apple. Everything is getting very chaotic, they're hiring people faster than they can train them, employees are demoralized by the constant reorganizations, they've got executives feuding with each other... So, how do you propose to avoid falling into that pit, because it's a very natural pit to fall into?

I think Sun has a foundation, has a tradition, has a history and has a management team that is much more fundamentally—MBAish, or process-oriented, or people-oriented, and sound-business judgment oriented, than just about any other classic Silicon Valley entrepreneur, young-kids-oriented kind of startup.

I mean, Sun hasn't *had* that bad quarter, hasn't crashed and hit the wall, hasn't had massive turnover, hasn't had that time when we absolutely had to regroup and refuel and reorganize. I don't know why. You'll have to decide why those others have had those situations and why we haven't.

I like to think that Sun has a real dedication to sound fundamental management. It's real boring. But we spend time to go do things like go one-on-one, have staff meetings, do planning, do reviews, chart where we're going, have a budget process. You know, all of the things that are just fundamental Management 101: do reviews of employees, pay people for performance. I think there's a very squeaky-clean focus on honest, fair, ethical behavior that keeps people from getting frustrated.

The worst thing a manager can do is get in the way of their people. And management here tries to stay out of the way of the people who are doing the real work. When I go into a one-on-one with somebody who works for me, I say, "What can I do to make you more effective?" As opposed to, "Will you do this? Will you do that?", etc. It's a different relationship, it's a different focus, it's a different management style. Why are companies successful? I think it's because of the management culture and structure that they put in place.

A lot of people think that you're kind of young to be running a billion dollar company.

I'm *seriously* young, not kind-of.

Well, the common wisdom is that the best CEOs have already screwed up two or three times, so they've gotten it out of their system. What do you do to compensate—or do you disagree with that?

I probably make more mistakes in a week than most CEOs make in three months. But I'm certainly willing to acknowledge that I've made them and go back and try and fix them. I think that's an attitude and style that exists in this company. It's all right to make mistakes—don't make them twice. Let people know what you're doing. It's a very participative management style here. I try and make as few decisions as possible. That way I'm less likely to make the wrong ones.

"What Sun really wants to be is respected, successful, highly ethical, a fun place to work. That's a more important goal here. I think a by-product of that is growth, profits and all the rest of it."

People often talk about consensus management. We don't have consensus management here at Sun—it's very line oriented. And the line organization makes the decision. And if they own all aspects of the decision, wherever that comes together in the organization, that's who makes that decision—if it can't be pushed down even further.

The one thing we are very much dedicated to is participative management. Everybody knows what decisions are going on—the whole world knows what we're dealing with. There are more rumors, there is more written about, there is more activity in the press about what we're doing, and they're all looking for that magical, "We've figured out what Sun is doing!" They don't understand they're just hearing bits and pieces of a very open, participative process within the company. And yeah, every rumor I've ever heard about Sun has been accurate in the sense that, yeah, we've evaluated it. But they think that because we've evaluated it, it's a direction we're heading. And it's totally misleading.

We used to worry that people would come in and see our email by logging into our network. Once somebody had an email conversation going on about "How are we going to protect our network?" We said, "It will confuse anybody so drastically if they ever read anything at all that goes on in our email"—just because that isn't necessarily a decision. There's a lot of discussion, there's a lot of participation. But then we go make the decision and away we go! And then we announce it. No hidden agenda. It's just, we don't know yet. When we say, "We don't know," we don't really know. When we know, we want the whole world to know so we can tell everybody.

But that's really a management style that was generated out of igno-

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"I'd rather be wondering where I'm going to get my next person as opposed to wondering who I'm going to lay off, or what project I'm going to cut because we're NOT growing."

rance and inexperience when I took over. Three months earlier, I didn't even know what a disk drive did. The last thing I was going to do was try and make a decision, so I tried to get everybody who knew in a room.

You'd be surprised at how basic logic solves most, if not all decisions. And then the rest of the decisions are lose/loses—there's no hope. They don't bring you the easy ones. They solve the easy ones and they only bring you the impossible lose/lose situations.

So you just decide whether you want to lose your right arm or your left leg, and just make some kind of fundamental judgment on which will hurt you less over the longer term. Those are the tough ones that I have to get involved in because nobody wants to be the one that says, "This is gone, or that's gone." Those are the ones I have to make. They're not fun, but they're aired out enough so people understand...in fact, they're pleading with me to make a decision because we've just got to move on. We've got to get it over with and start growing a new arm back.

There seems to be a merging between the workstations and PCs. The 386i seems to be some sort of recognition of that. What do you think will happen in the next few years? Will you go to retail channels?

There has been, at Sun, a very clear statement for a couple of years now; people aren't listening, because they don't want to.

But we don't talk about PCs or workstations anymore. Sun is a general purpose computer company. We are one of the top ten computer companies in the industry, in the United States, and we only refer to desktop computers, networks and servers. There's no such thing as a class. There are desktop computers that are anywhere from a calculator to a high-end 3D, solids modeling superworkstation, or whatever you want to call it. But it's $70,000 to $7 — that's the range of desktop computers you can buy. There's a blend all the way across of different price and performance and functionality points. So I can't answer your question in the sense of PCs versus workstations.

Well, let me put it another way. You can buy "PCs" through traditional retail channels...

You can buy *desktop computers* through many different channels. They can be installed direct, they can be installed through OEMs, they can be installed through VARs, they can be installed through Businessland. You can actually mail order them. That is so misleading, and that is so... *inflammatory*!

It is just inflammatory to say that Sun is going into the PC business! That sends our stock price down! That's why I'm so adamant about this! Because people think that it's something strange or weird. Sun is doing desktop computers! *Deal* with it, world! We've been doing it for a long time, we'll continue to do it! And we'll take it through whatever channel is most cost-effective to take our technology through. So far it's been direct and OEM, and we're expanding now into the VAR channel very aggressively and very successfully. And we think that's going to be a very good channel.

We happen to have some products that go through the dealer channel. Those products have typically been software and board-level products. They're selling through our TOPS organization. Now there are also Sun products going through the private-label channel; Fujitsu is a classic example of that. They're buying hundreds of millions of dollars. So there are many, many different channels, and there will continue to be many different channels that will take our products to market.

So the two questions you are asking are, "Are you going to build lower cost desktop computers?" Absolutely! We've said that from Day One; we will continue to do that. We will continue to drive the price/performance down to lower price points. And we think we can build very competitive products.

At that point, are there other, more cost effective distribution channels to deliver it? And maybe there are some new ones that become more important. Go back 10 years ago, there was no such thing as a dealer channel. Ten years from now there may be a whole new way of delivering this product. We'll stay very flexible. Will our product end up in a ComputerLand or a Businessland, or something like that? Those conversations have been going on for about five years now. They will continue to go on, and everybody wants to be the first to predict when it happens, and it's not useful.

Anybody who needs any of our products—they're totally available. Anybody who needs to get ahold of our product can get ahold of it.

I was trying to highlight the fact that Sun is now competing more head-on with the Macs and the PCs, as opposed to a few years ago when there was a pretty clear distinction.

There never was in our minds. It made it more convenient for people to write about the industry. But when the buyer tried to decide what they wanted to put on their desktop, it was very confusing to them. Because they wanted the Compaq, or the IBM price point, but they wanted the Sun functionality. Now they're starting to see the marriage of the two.

The only reason I get so enthusiastic about this whole concept is that...I just read that Stewart Alsop was quoted as saying, " It's going to cost Sun a billion dollars to get into the PC business." I have no idea where he gets a billion dollars, nor what it means to get into the PC business, because I don't know what the PC business is! If you ask an engineer who has a $50,000 dedicated Sun workstation on his desk, *it's a personal computer to that person!* It's theirs! They own it, they run it, they manage it. It's their computer! It's a computer and it's personal. Personal to me implies a one-to-one relationship.

"Management here tries to stay out of the way of the people who are doing the real work. When I go into a one-on-one with somebody who works for me, I say 'What can I do to make you more effective?' As opposed to 'Will you do this? Will you do that?'"

Are we going to get into the Intel 386, DOS business? We already are! Are we going to get into the $2000, 286 clone business? I can very comfortably say, "Why?" So you have to look at each little piece of the desktop pie, and say, "Is that the one you're going to go after?"

Can we talk about Open Look? It seems like from at least three directions, people are converging on the same thing: A friendly multiuser, multi-tasking environment that's easy to deal with. There's OS/2 out there with Presentation Manager...

There's forty different dashboards out there and you can operate every one of them because fundamentally the concepts are similar enough and intuitive enough so that you know, "Well, that's a radio, and you can turn it on."

From a user's standpoint, what is the advantage of Open Look over some of the other options, all of which have the disadvantage of being a little vaporish at this point?

The user doesn't have any advantage until the product ships. From a user perspective, Lotus *1-2-3* written to Open Look, versus *1-2-3* written to Presentation Manager versus *Excel* written to the Mac—they're all pretty much going to be six of one, half a dozen of another in terms of the training time. You sit in an automobile, it takes you a few seconds to get familiarized with the dashboard. It will take you some minimal amount of time to get familiar with the dashboard, if you will, of this new *Lotus* application or *Excel* application. If you know how spreadsheets work, you'll be able to bomb your way around.

Now the one advantage you can look to is performance, and the features and intuitiveness of the environment. And Open Look, we believe, has more intuitiveness, in the sense that it has things like a tack pin, where you can pin things up as opposed to having them go away. So, you have a push pin that you can push into your little document—that's very intuitive.

It has things that are very productivity oriented. If you want to scroll up in the thing, in a Mac window for instance, you have to move the mouse up to the top right hand corner and then scroll up. And then if you want to move down, you have to move the mouse all the way down, travel all the way down the window to the down button and scroll down—instead of having an elevator which you put the cursor on and then you move your mouse up and down, and it scrolls up and down as an elevator. So, you can go up and down without ever repositioning the cursor. That's highly pro-

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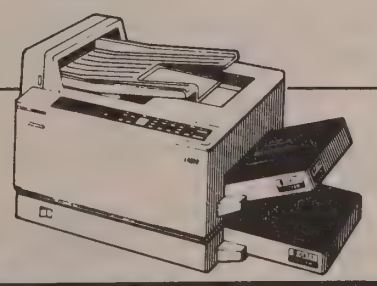

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ductive with respect to that one little task.

Now you do a bunch of those things really well, and you can get an environment that is more productive and easier to use.

Then you have tool kits and the tools that allow you to build an application faster, which means if you buy a computer that supports Open Look you can potentially get applications faster because the developers can build the applications faster. You'll have one that runs in more than one environment. Presentation Manager only runs on Intel machines. As far as I know, it's only *gonna* run on Intel machines. Open Look is going to run on every instruction set in the business. So you have an environment that's much broader and portable. The Mac look and feel only runs on Macintoshes. So Open Look will be much more pervasive across many more computer companies' environments.

So potentially any machine that runs UNIX can run Open Look.

V.4 will have Open Look as part of the package. So any machine that runs V.4 will run Open Look.

The OSF people are forever bitching and moaning that you and AT&T have this lovely sweetheart relationship....

Can I draw you a picture? (starts drawing diagram on tablet)

This is total garbage and the press has been....I'm kind of aggressive, so I apologize, but I think the press has not had an incentive to solve the confusion. And in fact they've enjoyed this story because its probably sold more ad copy than anything. But it's very simple. The world pre-OSF and pre-Archer Group was this: From a UNIX-centric point of view, there was the Coca Cola Classic, which was System V from AT&T. It was the only one with a trademark. It was *the UNIX*, it was *the original*, it is the *only*, right?

There's a whole bunch of what I call variants. There were thousands of them, right? And [drawing chart] let's rank them in terms of volume: XENIX, Berkeley, Sun OS, blah, blah, blah. I don't know what they all were, Ultrix, HPUX, A/UX.. you get way down here and you have AIX.

Which IBM *now* claims to be very proud of.

Right, and it's a non-volume variant. You have to understand that! It was and is a non-volume variant! And then you get down here to probably the lowest volume—Mach, which has maybe six units shipping, thanks to Steve [Jobs]. So, now we have another variant! The press absolutely whiffed on that! He just introduced another G-D variant! We don't need another variant! This is the situation we're dealing with. All right, so this is pre-OSF.

And then we had what I call the deviants. Highest volume there was DOS, then Mac OS, then blah, blah, blah, right. You know, then VMS, blah, blah, blah.. then VM. And then down here you have OS/2. And you

"I probably make more mistakes in a week than most CEOs make in three months. But I'm certainly willing to acknowledge that I've made them and go back and try and fix them. I think that's an attitude and style that exists in this company."

pick your favorite going-out-of-business deviant down here. Now that's the world.

Really confusing isn't it? It always has been, always will be. At least for the next few years until we get to the internal combustion engine and everybody does it that way. But it's been confusing.

Now AT&T tries to do the right thing. They said, let's take the highest two volume-variants, Berkeley/Sun OS and XENIX, and let's combine them into V.4. Great. We now have, basically, only low volume variants left. And that's true.

There is no high-volume variant that is more than a few percent of the UNIX volume left in the variant category. And this merges everything to V.4. And what you saw with the Archer Group is that 70+% said, "We're not commited to a variant. We're not commited to a process. We're not commited to an organization. We're commited to shipping this product on our workstations, on our computers, on our everything."

Now you have yet *another* variant being offered [OSF]. Which I put down here absolutely dead last. It has no volume. No volume! I don't care about statements of...marketing statements. It's a mutant AIX. It's a mutant variant. Because they will mangle it, because they don't want to pass through AIX and give this low volume company here [IBM] an opportunity to have an advantage. So this will be a mutant AIX, a mutant variant. And it will be out someday in the mid 1990s. The war will be over, the game is done. It's all over.

Now what people aren't saying, and won't say, because they think IBM is a powerhouse in UNIX, is that there is nearly no chance for any of these variants to become even a low-volume variant, much less a significant volume! If you're a software developer, you're going to develop to this one first because it's the one true product. There are software developers' kits out on X11-NeWS [Sun's windowing environment]. There are software developers' kits out today on Open Look. And you can go to Sun, or XENIX, or a System V machine today and have a very nice migration path to V.4. And there's no environment out here [toward OSF].

I mean, why would you do Ultrix, because they're going to move to OSF? Why would you do HPUX? — they're going to move to OSF. Why would you do A/UX?— just *read* about it. Why would you do AIX?— because IBM isn't serious about UNIX, and it's going to be different from OSF anyhow—which is where they're supposed to be moving.

And what is IBM really doing, given that they're not at all paying attention to the OSF practical user interface, because they went out and did something different with NeXT, and said screw you? I mean, they got them all stuck to flypaper and then ran off. I mean, there's nothing confusing about what I just said! Tell me what's confusing. Because *you* have to be convinced!

The thing that's confusing is—what's in it for them?

What's in it for who?

OSF. From your standpoint, why are they even bothering?

There are two reasons OSF was formed. The first one, which has been solved, was that AT&T wasn't listening to its customers. And AT&T responded. And it probably took those companies all spending $13 1/2 million to get it done. But they formed the UNIX division.

And two is that the Archer Group was formed as a user organization to tell AT&T how and which ways they ought to deal with the licensing terms and conditions — how they ought to handle the technology, etc. That has absolutely solved all the problems H-P had. And I think if you asked H-P, if this had existed nine months ago, would they have wanted to pay $13 1/2 million to another organization that is not likely to generate a product and where most of the dollars are going to IBM's bottom line to pay for AIX? I think they would say no. But now they're trapped. This thing blew up in their face. It became bigger than life. And now they're trapped.

Now, that was one of the problems, and it got solved. As far as Unisys, NCR, Sun and others are concerned, AT&T has absolutely...we *thank* OSF. Thank you very much, you were very useful! We're certainly glad we didn't have to pay to make that happen! But, you know, H-P, you've done the industry a very nice favor. Thank you, now V.4 can proceed and become the standard that it is.

Now, the other problem, and the reason OSF was formed, was that DEC, IBM, H-P and Apollo wanted to throw a big curve ball at Sun Microsystems. And that probably will not go away.

Can we talk about SPARC and where it falls in your overall strategy? You guys are probably at least as much a software company as a hardware company. And now you're a microprocessor company too?

This is another one where the press has got it all wrong! I can't, I mean...

We're so glad we came...

This is why I like to spend the time. Because every time I turn around they say, "There's Motorola pushing the

"It is just inflammatory to say that Sun is going into the PC business. That sends our stock price down! Sun is doing desktop computers! DEAL with it, world! We've been doing it for a long time, we'll continue to do it!"

88000. Intel's pushing the 386, and Sun's microprocessor, SPARC." Sun has never sold a SPARC chip in its life! Never will! It's TI's SPARC! It's Cypress's SPARC! It's Fujitsu's SPARC! You never see it written up! Because they're competing against TI. Motorola isn't competing against

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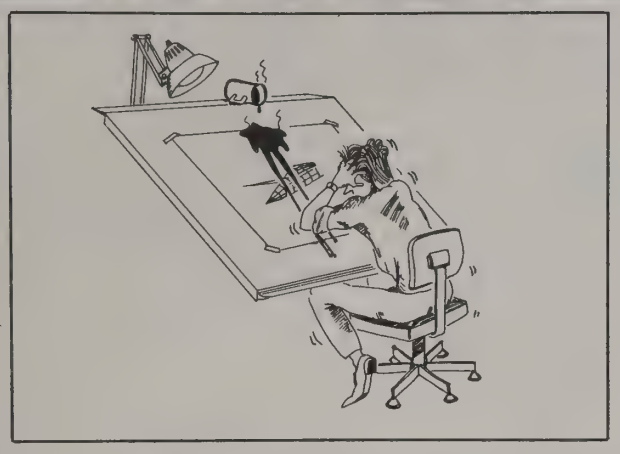

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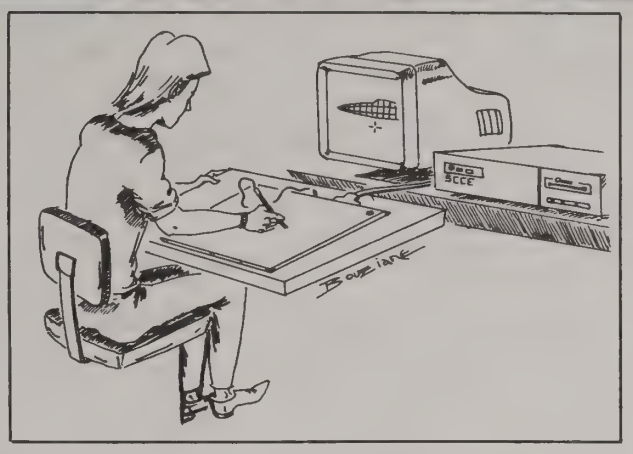

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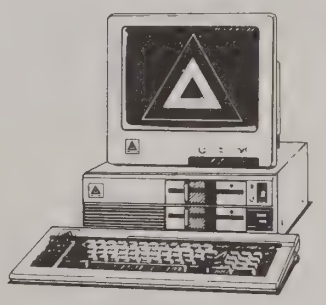

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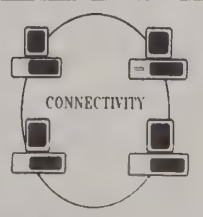

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McNealy on OSF: "What is IBM really doing, given that they're not at all paying attention to the OSF practical user interface? Because they went out and did something different with NeXT, and said 'Screw you!' They got them all stuck to flypaper and then ran off."

Sun in the chip business. They compete against TI. But nobody will ever write that! They refuse to. We don't sell chips!

I actually think that's really pretty clear. As far as you going out and designing...

It's never written that way. I can show you two million situations where its... I've never once seen, "TI's competing against Motorola in the microprocessor business." Not once!

We're going to do some things to change that. But we'll give you a little salt pellet in a rain cloud so you can all kind of gather 'round and make it rain the right way here. But that's our job. Because we don't do SPARC chips. We do the Sun-4 computer based on the SPARC chip. Just like we do Sun-3 computers based on the Motorola chip. And Sun 386i computers based on the Intel chip.

So SPARC was more by way of establishing a standard?

SPARC was a way where we could buy chips from multiple vendors across a broad range of technologies with RISC as the architecture, as oppose to CISC [Complex Instruction Set Computing]. That's all it was.

People are looking for some sort of magic, like we're trying to create a standard. We just wanted to go buy RISC chips where we didn't have to pay one company and count on one company to make that architecture fly. We have seven of the best silicon companies making our V.4 architecture wiggle fast: Intel, Motorola, Cypress, Fujitsu, TI, BIT and LSI. If those seven aren't on the leading edge, then I'll be real surprised.

What's the difference between the chips you'll buy from different vendors?

Oh, BIT's building an ECL (Emitter Coupled Logic) chip that will put out 40 - 50 MIPs. We're buying custom CMOS from Cypress...

Will they all run the same instruction sets?

They are all identical instruction sets. Now they can add enhancements to it, but the basic core architecture is identical.

What does "scalable" refer to?

The fact that its a very simple architecture that can be implemented on gate arrays, custom CMOS, bi-CMOS, bi-polar ECL, gallium arsenide. You can scale it across from very low end computers to very high end computers, from very low clock rates to very high clock rates, from very low tech technology to very high tech technology like gallium arsenide. You can build laptops to supercomputers with the technology.

Do you anticipate a lot of other vendors building SPARC-based machines?

Well, they've already announced. I mean you seen how many people have already announced: Unisys and ICL, Arix, Solbourne, Prisma, AT&T, Sun, Seiko and Fujitsu. There's going to be more SPARC computers than...I really believe that there's more investment, on the silicon side, in SPARC, than any instruction set ever in the history of the world. There is more across a broader range of technologies, across a broader range of companies. There's more software written on the SPARC RISC instruction set, and more UNIX expertise, than any RISC architecture anywhere, by far.

We have the best UNIX teams with AT&T and Sun and Unisys and others working on SPARC UNIX. And there's more application software, by far, written to the Sun-4 with the SPARC microprocessor, in the RISC arena than any other RISC out there, by far. There's higher volume, by far. Do you know we're doing about a third of our revenue right now with the Sun-4? That's after a year of having that thing out in the world. And there are more SPARC computers under development than any other RISC computer development architecture.

And it doesn't matter who wins, because this is a winner! This is one of the winners! I mean, you've seen how many operating systems there are. Well, there are going to be a lot of instruction sets. But this is going to be one of the clear high-volume architectures and one I think you'll see both the classic low-end software developers who develop personal productivity software—certainly all the current mainstream UNIX application developers, and even in the high end when they've typically been writing to mainframes, I think you'll see everybody porting to the SPARC, V.4, ABI—applications binary interface.

So, people just aren't acknowledging...I mean there's nothing I've said that is really refutable. Because people are always challenging me, and if I don't have a very strong conviction I'll retract the statement, but I just can't retract any of those, because there's nobody who's got anything close to anything, all through that spectrum. And yet people, for some reason, are just, I don't know, waiting for the big boom. You know, it just can't be accurate. But this is the same story we've been giving for years, and it's only gotten more accurate.

It seems that you've fallen a little bit out of favor with Wall Street—what's your opinion of that?

Oh, I think that's a further confirmation of our strategy.

In what way?

If Wall Street says they're scared, then it's got to be working. If Wall Street doesn't understand it, then we're doing something right.

What's your opinion—I have to ask this—of the NeXT machine?

Let me go through it. This is kind of a rote answer.

Wrong microprocessor. Why would you do CISC as opposed to RISC? I think he regrets it. You notice he didn't talk about performance at all. Second thing—eight megabytes. This is hardly what I'd call a low-end student desktop computer.

Thirdly, wrong operating system. He's got the second-to-lowest volume variant on the list here. Ahead of only OSF in volume.

Which doesn't exist yet.

Fourthly, he's got a totally proprietary approach. You can't go do an Apple unless you're first. You can't come in last and expect to be proprietary.

Fifth, one of his great advantages is his optical disk, right? We could write a driver for that disk in a couple of weeks and have it through our R&D and QA facility in a month and beat him to market with it, if we wanted.

Sixth is—it's not shipping until next summer.

Seventh is—$6500 is his 40% discount price, not his list price.

Eighth, his sleek styling is nothing more than a big, clunky, ugly cube. Let's call it what it is. It's a very nice paint job — for black. But it's nothing more than a big, clunky box.

His wonderful software development environment that allows you to build applications faster will be necessary, because everybody first is going to write to V.4, and he's going to be way behind, because the first application implementation is going to be done under V.4. And then they'll decide to do #2 to somebody else — probably OS/2 or probably Mac OS. So he's going to be fifth or sixth in line, and he'd better have a way of getting that application out fast, because we're going to have been shipping the low end applications for many, many months before it ever shows up in his environment because of the volume.

Finally, I think he's going to be awfully surprised at the level of competition that he's facing, summer of '89, in terms of what new machines are out there. I saw his product being compared against the 3/50, which was introduced about three years ago.

On SPARC: "People are looking for some sort of magic, like we're trying to create a standard. We just wanted to go buy RISC chips where we didn't have to pay one company and count on one company to make that architecture fly."

Why bother to make that comparison?

Well, he has magic dust! He has absolute magic dust!

And he uses it liberally!

How many people got to play with the machine? It was behind a glass wall. Do you really need to rock on with your bad self when you program? Is Bob Dylan really strategic to programming your computer?

And is it not better to have the DSP as a daughter board plug-in, so that

continued on page 116

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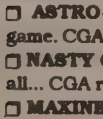

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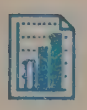

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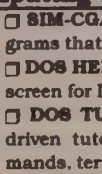

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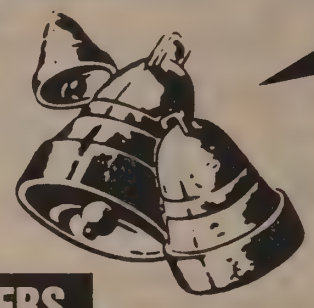

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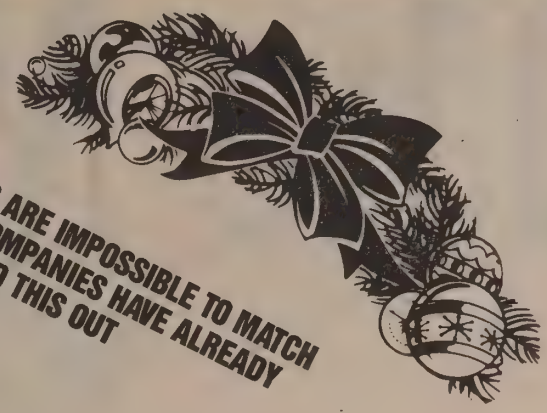

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The MicroTimes 100

Our Annual List Of The Industry's Most Influential Leaders

MAN OF THE YEAR:

SCOTT McNEALY
Chairman of the Board, President and CEO
Sun Microsystems

In a year in which connectivity, standards and multivendor environments were key issues, Sun seized and held strategic positions with a series of announcements and alliances (see cover story). From the Sun-AT&T agreement to bring together the diverging System V and Berkeley UNIX dialects into an industry standard to the evolution of the Mac-PC-UNIX TOPS network to the introduction of the UNIX-DOS 386i workstation and the RISC-based SPARC technology, McNealy has led Sun to a position of technological excellence in today's industry and significant influence on its future development. It is, perhaps, equally important that he's managed to do so while maintaining Sun's unique culture of hacker zeal, common sense, business acumen and good fun.

PHOTO: MICHAEL JAY

Phil Adams, *President*
Gilman Louie, *CEO*
Sphere

This year saw the fusion of two outstanding game software houses as Spectrum HoloByte joined forces with Nexa. It looks like another inspired alliance: Adams, who cofounded Spectrum Holobyte and oversaw its sales, distribution, and its acquisition and development of product, brings marketing and management expertise to the new company, while the entrepreneurial Louie, who founded Nexa with his college buddies, has an impressive track record in software development.

Probably the most visible contribution Sphere made to the industry this year was that of acquiring (and porting to as many machines as humanly possible) the diabolically addictive Russian game *Tetris*. Thousands of offices will never be the same. However, Sphere also continued to maintain its ancestral traditions of ingenuity and quality in its other game products, notably the *Falcon* flight simulator, and launched an "International Series" of games, so it's unlikely that *Tetris* will be the last word.

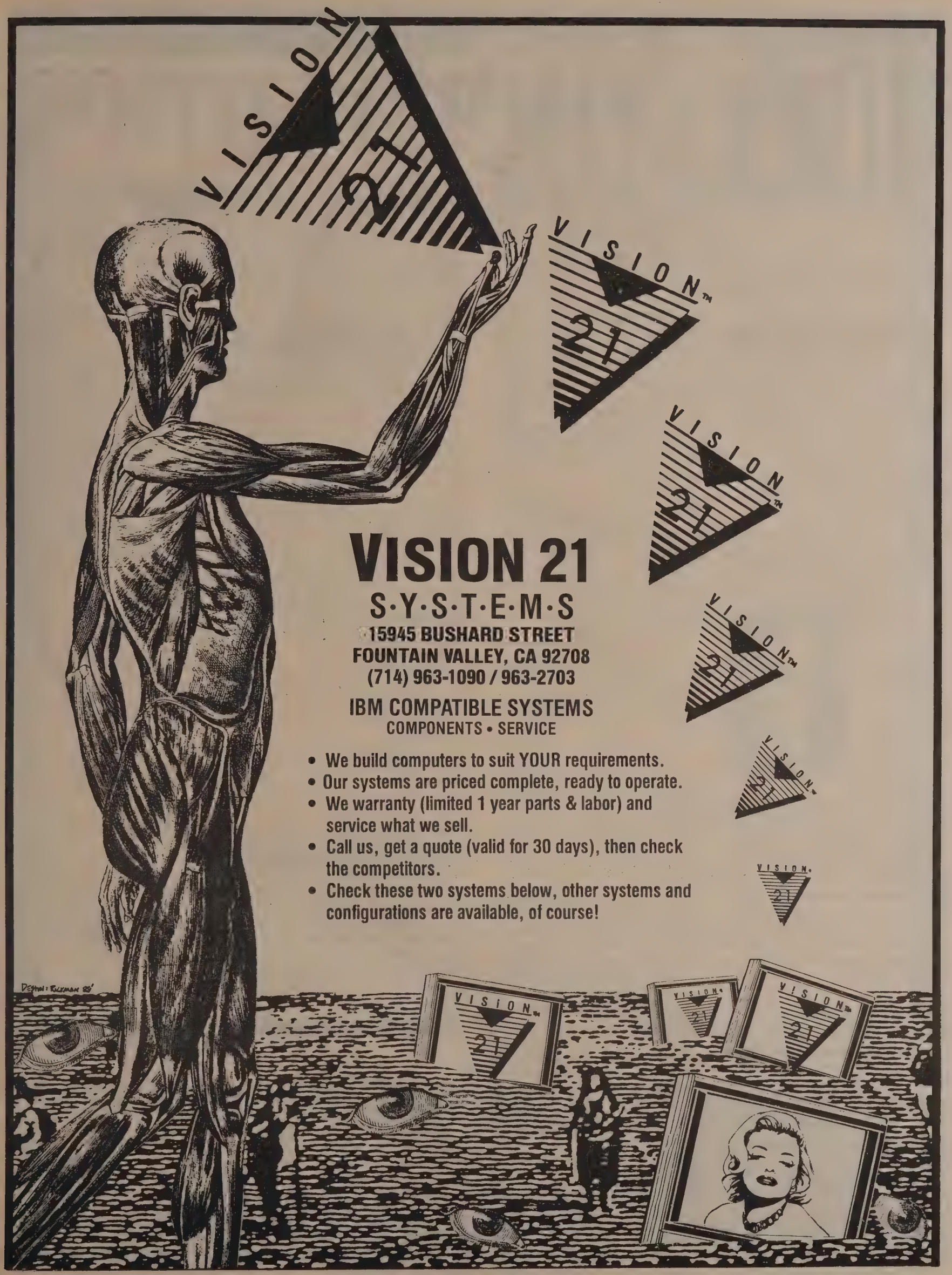
Gilman Louie (left) and Phil Adams

Sheldon Adelson, *CEO and Chairman of the Board*
The Interface Group

Adelson's company, the premier producer of computer trade shows, continues to be one of the chief vehicles for bringing vendors, products and customers together. At COMDEX, Computer Faires and a host of other expos, the wheels of the industry turn, alliances are made, deals struck, and the world changes. Adelson's extensive knowledge and contacts bring a wide variety of speakers and exhibitors to the events, providing a steady flow of information and product knowledge to both individual and corporate computer users and enthusiasts.

U.S. District Judge Robert Aguilar
Apple-Microsoft-HP Look-and Feel Case

In the increasingly surreal arena of look-and-feel, Aguilar presided over the much-ballyhooed suit between Apple and Microsoft/Hewlett-Packard on the issue of Mac-like inter-



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MicroTimes 100

faces. While the case itself promises to be a latter-day *Jarndyce Vs. Jarndyce,* Aguilar has become something of a media figure; as everything from his personal life to his legal style come under scrutiny, many continued to wonder why the case is being tried before a judge whose son works for Hewlett-Packard. (At year's end, the case was moved to the US District Court in San Francisco, to be heard by Judge William W. Schwartzer.)

John Akers, *Chairman of the Board, President and CEO*

IBM

Under the leadership of Akers, IBM is aggressively meeting (and in some cases, beating) new challenges from a host of new and old competitors. As the organization itself gets leaner and meaner, Big Blue has raised speculation, not to mention a few eyebrows, by forward-looking acquisitions of technology from Metaphor and NeXT, Inc. (The latter deal, in the classic manner of high-tech serendipity, is said to have originated at a party, at which Malcolm Forbes introduced Akers to Steve Jobs.) Also, IBM has announced the SAA standard, which will allow its customers to use applications which look, feel and behave the same on any of IBM's machines, thereby simplifying migration to more powerful hardware as a company's needs increase.

Victor Alhadeff, *President*

Egghead Software

In 1983, Alhadeff bought his children an Apple II and went software shopping. He found the experience so disheartening that he decided to start his own chain of what he terms "customer-oriented" retail software stores. Cheered by its customers and often cursed by its competitors, Egghead's been growing ever since and had its first public stock offering this year. Alhadeff's inspired combination of atrocious puns, instantly-recognizable artwork, local software fairs, customer service, a broad selection of software bestsellers and rock-bottom prices have brought the young company a remarkable presence and market share in high-tech merchandising.

Alan Ashton, *President*

WordPerfect

Ashton not only founded WordPerfect but, until last year, was also a full professor of computer science at Brigham Young University. His continuing interest, as evidenced by the company's popular word processor, lies in developing powerful, flexible, easy-to-use software. This year the company undertook the ambitious project of porting of *WordPerfect* to every significant microcomputer platform, including Macintosh, Amiga and Atari. And while the resulting products have had a somewhat mixed reception based on first-release bugs and what many saw as excess DOS dependence, WordPerfect scored points for advancing the cause of connectivity and won thousands of new friends with its excellent support and responsiveness to customer needs.

Bill Atkinson, *Apple Fellow*

Apple Computer

In this, a year in which Apple went unabashedly corporate, raised its prices because it could, and generally alienated a good many of its most devoted customers, Mac lovers drew comfort from the fact that somewhere in the hallowed halls of Advanced Products, Bill Atkinson, who already gave us *MacPaint* and *HyperCard*, is working on something great.

It was also a year in which *HyperCard*—bundled with all Macs at Atkinson's insistence—proved its worth, as commercial *HyperCard*-based applications came to market, thousands of users (including French automaker Renault) decided it was worth buying Macs to get *HyperCard*, and staid software vendors like Oracle decided that *HyperCard* interfaces for their products were the wave of the future.

As for Atkinson, he and the *HyperCard* team continue to enhance and refine the product, which seems to offer more power and require less memory with each release. He also seems to spend a lot of time fielding questions about things he's not allowed to talk about—*MicroTimes* contributing writer Roger Karraker reports: "When I saw Bill Atkinson in Boston I suggested to him that because of HyperTalk's relatively limited vocabulary it would be a natural for voice input programming. He was suddenly and stonily silent."

Daniel Ben-Horin

CompuMentor

Ben-Horin discovered that many nonprofit and social-service organizations in the Bay Area could benefit from the use of computers in their work, in applications from office management to newsletter production. However, many of these people had no idea how to use machines they already had or were uncertain about what equipment they really needed. Enter CompuMentor, Ben-Horin's brainchild, which matches nonprofits with like-minded computer-literate volunteers who provide advice, support and hands-on training. Community work gets done more efficiently, computer fear lessens—and the industry acquires goodwill and new customers.

Michael D. Boich, *President and CEO*

Radius

As an undergraduate at Stanford, Mike Boich bought an Apple I computer in 1976. He eventually became a member of the Macintosh development team at Apple, and founded Radius with other Apple alumni in 1986.

As the Macintosh continues to make inroads into the professional

The Best And Worst Of 1988

Our readers weren't shy about expressing their likes and dislikes for people, products and companies this year. There were some obvious trends—nobody, for instance, had anything good to say for look-and-feel lawsuits—but there were also impassioned statements about individual products and concerns.

The Best

- One popular choice was the long-awaited NeXT machine, as much for the flashiness of its presentation as for its capabilities.
- Metaphor got quite a few favorable comments for its interface technology and its deal with IBM (see main story). Said one reader: "It's the first time IBM has invested in another computer system's company. Quite a coup for a small company like Metaphor." Another reader praised the functionality and design of Metaphor's approach to data interpretation.
- IBM itself garnered praise for its shift to graphics-based interfaces in its product line, and Microsoft, NeXT and Metaphor received compliments for their collaborations with IBM.
- One reader's choice for Year's Best was Dr. Bob Blogets of Teaching Technologies in San Luis Obispo, for his work on educational software for the Apple IIGS. Another reader raved about the Breakthrough 286-12 board—"At $595 it accelerates lowly PCs to a speed faster than most ATs. I've looked at several accelerators, and this is by far the fastest at anywhere near this price range. I find most ATs aggravatingly slow compared to a standard PC with this board. And this board is compatible with every computer and add-in board I've tried." (The reader in question did not give us his name, but did thoughtfully provide the name and phone number of the board's vendor, PCSG in Dallas, TX, 800/544-4699.)
- Another product testimonial from happy user Jeff Williams: Westlake Data's *Pathminder.* Says Jeff: "It doesn't get much publicity, but I use it a thousand times a day. It's the best—better than *Norton, XTree*, etc. Slick, fast and easy."
- And finally, from writer David Batterson: "MCI Mail, for adding the ability to send to any fax machine worldwide via MCI Mail."

The Worst

Here's where things got really lively. There seems to be quite a bit that people loved to hate in 1988.

- A popular bash-ee was the Apple look-and-feel lawsuit against Microsoft and Hewlett-Packard. "What a desperate act that was!" commented one reader. "Apple lost a lot of credibility over that one." "Come on!" snorted another: "They haven't a leg to stand on. They should have done a little homework. What a backfire."
- Just as popular an object of wrath and scorn was Lotus Development. One reader took Lotus and its president, Jim Manzi, to task for "failed promises about *Lotus* 3.0." Another griped about "their 'timely' introduction of various 'vaporware,' i.e. *Lotus* 3.0, *1-2-3-G*, *1-2-3-M* and *1-2-3 Mac.*"
- Student Don Lancer nominated the EISA bus standard: "Oh brother—how many more?" On the other hand, UC professor Bill Ibbs panned "IBM, for continuing to insist on the vapor-merits of the Micro Channel Architecture."
- Unhappy users complained about various products with which they'd had bad experiences: one wanted to warn the unwary not to buy the Amstrad PC 1512 ("The wrong computer at the wrong time!"), while another, who seems to have had remarkably bad luck with computer products this year, griped about the Toshiba P321SL printer (the ones in his office required frequent print head replacements and had a penchant for paper jams), *Sidekick Plus* ("Too slow, too big and too incompatible. I'm 0 for 3 on three different computers") and *WordPerfect* 5.0 ("talk about screwing up a good thing...").
- Computer viruses were another thing people would have been perfectly happy to do without.

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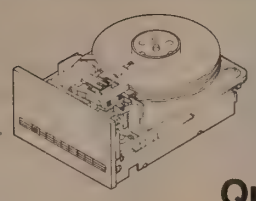

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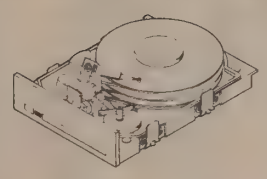

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MicroTimes 100

graphics and publishing worlds, its acceptance is spurred by the Radius. Under Boich's leadership, the company continues to lead and innovate—its products include high-resolution displays for design and layout, ranging from a single-page monochrome monitor to a full-color two-page display unit, to accelerator cards which give the Mac the performance graphics applications require.

Paul Brainerd, *President*

Aldus

Brainerd's publishing expertise and ability to see the Macintosh's potential in that field led to the genesis of desktop publishing. This year, not content to rest on its abundant laurels, Aldus enhanced its flagship product *PageMaker* with new versions for both Mac and PC. True to its origins of defining and dominating new markets, the company continued to expand the envelope of what's possible on a personal computer: it introduced *FreeHand*, the first PostScript-based illustration program with a freehand drawing tool, and announced *Persuasion*, a desktop presentation package, which promises to allow the most inartistic executive to create dynamic, compelling presentations with ease.

Don Brown, *Vice President, Director of Programming*

CE Software

Universally blessed by Mac users for such indispensable and well-behaved products as *MockPackage*, *DiskTop*, *QuicKeys* and *QuickMail*, CE has a deserved reputation for excellence and hacker zeal. That would probably be enough to get Don Brown on this list, but in this, the Year of the Virus, we'd like to salute him for a couple of other things. First, for writing and giving away *Vaccine*, which sits on innumerable hard disks protecting them from invasion. And second, for the notes he wrote to accompany *Vaccine*, which we think address the situation rather well:

Some people may invent a virus that defeats Vaccine. Big deal.

It does not take a genius of a programmer to do so. It will not get you acclaim, it will not prove you're better than anyone else. If you want a challenge, write a better tool. Not only will you get more fame, you can also make money with it.

I do not intend to write further versions of Vaccine. People expressed concern about a continuing spiral of ever-nastier viruses being fought by ever-nastier defenses. I will not fuel this spiral.

Some people still fail to see the harm in spreading viruses. I think they're wrong.

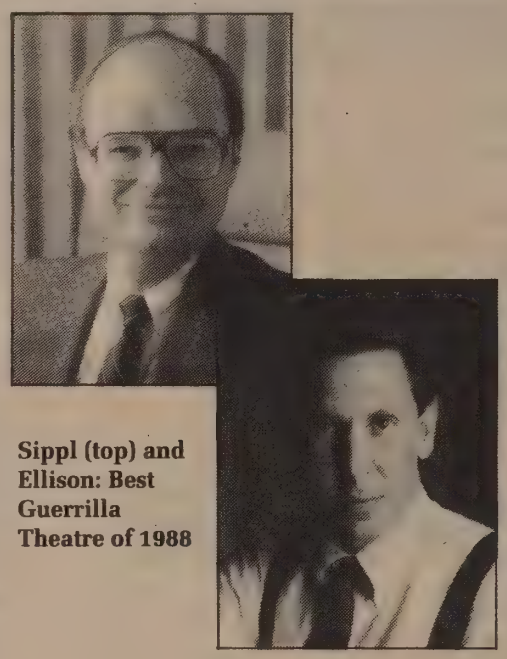
The whole thrust of the personal computer has been bringing control of the computer to the user. Viruses steal that control away and replace it with fear, uncertainty and doubt. Why would we want to take such a gigantic step backward?

Why, indeed?

The First Annual Philippe Kahn "We're Not Going To Become A Bunch Of Corporate *******s" Award

This award has been instituted in commemoration of last year's deathless comment by Borland's president in response to an oration by Ansa president Ron Posner. Posner, you'll recall, wrapped up the announcement of the Borland-Ansa merger, which brought the database *Paradox* and its Fortune 500 customers to Kahn's company, with an astonishing paean to the glorious future of Borland now that it had decided to join the real world. Posner (who shortly thereafter left Borland to seek his fortune elsewhere) was rendered nearly apoplectic by his new boss's characteristically scatological rejoinder.

Let's face it—as the corporate world adopts microcomputers in record numbers, a certain creeping dullness is making its way into the industry along with the megabucks. A dullness that's all the harder to take because most of the founders of the personal computer industry are pretty interesting folks. So, as an antidote to this faceless homogeneity, the editorial staff of *MicroTimes* has instituted this award for the interjection of liveliness in the strangest of places.



Sippl (top) and Ellison: Best Guerrilla Theatre of 1988

This year's award goes to presidents **Larry Ellison** of **Oracle** and **Roger Sippl** of **Informix**, who jointly created the year's best bit of impromptu guerrilla theatre at, of all places, a Pyramid press conference.

This summer Pyramid had a spiffy new workstation it was unveiling, and hit upon the notion of combining the announcement with a symposium on the future of relational database technology. Toward this end, it succeeded in putting together an illustrious panel consisting of top executives from almost all the vendors of relational databases in the UNIX world.

As you might imagine, a panel discussion of relational database technology, while informative and certainly of great interest to those who specialize in these matters, is a pretty staid and decorous affair. And so this one started, as executives including Sippl, SCO's Doug Michels and Sybase's Mark Hoffman said all that was proper about their products, their powerful features, their flexibility, their glorious future, etc.

Finally it was Ellison's turn. Now Oracle is a very large, very successful database company, and Ellison is known never to have had much regard for humility. Nor does he seem overly worried about what his rivals think of him. So he sarcastically remarked that since all his competitors had claimed wonderful and superior properties for their products, he was going to insist that Oracle's product had all those qualities and then some. Once he had the undivided attention of his amazed audience and co-panelists, he continued by casting aspersions on the credibility of his rivals' claims about their products' performance in benchmark tests, because after all, everybody *knew* Oracle was superior in every way to every other product.

Well, apparently benchmarks are something of an obsession in the database world. In any case, Ellison's remarks were too much for Sippl, who had heretofore spent many successful years in the software business without acquiring the reputation of a firebrand, but was roused to fury at the slurs on his veracity and his product. What ensued was a lengthy shouting match in which Ellison and Sippl hurled epithets at each other, each shouting extravagant claims as to the ability of his software to outperform his rival's in any benchmark yet devised. Physical violence seemed a distinct possibility as the combatants were restrained by their fellow panelists; a shaken Pyramid executive, in response to Sippl's urgent request, promised to host a series of Oracle-Informix performance tests on Pyramid equipment at no distant date.

If this test took place, we haven't heard about it. However, we'll probably always wonder about that lurking element of danger in database discussion.

A footnote: while we haven't heard yet how Informix performs relative to Oracle, we've recently heard a few denizens of Sybase chortling about how their product beat the pants off of Oracle...

Gordon Campbell, *President, CEO and Chairman of the Board*

Chips and Technologies

Campbell, a veteran of Intel, brings expertise and ingenuity to the design of powerful processors. Noting that today's graphics-based environments and memory-hungry software require increased speed and processing capability, while tomorrow's Artificial Intelligence and "human interface" systems will require even more, he leads the company in its drive to extract maximum performance from its products—for example, its chip set for PS/2 clones replicates IBM functionality with fewer chips.

As the business user debated over the OS/2-DOS tradeoffs, Chips and Technologies offered a choice to its hardware-vendor customers. Foreseeing a two-standard future, it responded with processors which duplicate the functionality of PS/2 machines and also continue to work on its NEAT chipset, which offers enhanced AT performance and a migration path for PC/XT/AT users.

Bill Campbell, *President and CEO*

Claris

In his first year in charge of Apple's software spinoff, Campbell, a former vice president of sales and marketing at Apple, has used his expertise to make some impressive strides in establishing a Claris identity distinct from the parent company (as evidenced, for instance, by his less-than-enthusiastic remarks at AppleFest about Apple's less-than-popular price increases). In addition to shipping updated versions of erstwhile Apple applications like *MacDraw* and *MacProject*, Claris made some strategic acquisitions (of Nashoba and its *FileMaker 4* product for the Mac, and StyleWare, developers of *GSWorks*, rechristened *AppleWorks GS*, and *MultiScribe GS*). It's showing good signs of offering a full range of powerful applications, having also announced *Claris CAD*, *SmartForm*

The Cordata CS-45

Tops in PC/XT Speed and Flexibility

Cordata now offers an entry-level PC/XT computer, the CS-45 series. The CS-45 comes standard with 512K RAM (upgradable to 640K) and a turbo 8088-1 three-speed processor.

Running at user-selectable speeds (from the keyboard) of 4.77, 8 and 10 MHz, the CS-45 front panel includes a speed indicating light. The motherboard contains a floppy drive, clock/calendar and an 8087 math coprocessor socket.

The built-in video controller supports IBM MDA, IBM CGA, AT&T 6300, Hercules and Plantronics. You can use a color or monochrome monitor, and the AT&T 6300 support provides true 640 x 400 high resolution graphics. The addition of CGA, MDA, Hercules and Plantronics modes ensures compatibility with many other industry software packages.

Built-in RS-232 asynchronous serial and parallel ports allow connection of printers and communication devices without utilizing one of the system's four full-sized, XT-style expansion slots.

The CS-45 series includes a one-year limited warranty and MS-DOS 3.3 and user guide. Also included is Cordata Pal and Cordata Tutor which quickly educate the novice user about the basics of computing and MS-DOS. These special features help make the CS-45 a great starter system.

Monitor optional.

Small footprint (13.5" W x 16" D) Detachable keyboard has reduced footprint, too.

Ask your dealer about a special value on the CS-45 with a 30MB drive

The Cordata CS-45 is available through the quality dealers listed below:

ANAHEIM
CANYON COMPUTERS
430 "B" N. Lakeview Ave.
(714) 970-8634

IRVINE
VALCOM COMPUTER CENTER
17777 Main St., Ste. F
(714) 261-1500

CHATSWORTH
WIZARD OF OZ
20630 Lassen St.
(818) 709-6969

POINT HUENEME
PCS
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cordata DAEWOO ELECTRONICS CO. LTD

MicroTimes 100

Designer and *SmartForm Manager*.

Rod Canion, *President and CEO*
Compaq

As one of our readers commented in nominating Canion for this year's list, "By building the fastest 386 machines and spearheading EISA, Compaq has significantly reduced IBM's dominance in the marketplace, a feat not to be taken lightly. Sure, cheap clones have helped erode IBM's market share, but guess who paved the way for that!"

Enjoying another banner year, Compaq continued to lead the market of powerful computers based on the evolving AT standard. In a move likely to influence not only the acceptance of IBM's PS/2 line but also the evolution of standards for years in the future, Compaq also was among the strongest supporters of the Extended Industry System Architecture (EISA), a non-Micro Channel bus which will allow 32-bit machines to operate at high speeds while retaining compatibility with existing PC and AT cards.

Marc Canter, *President*
Macromind

It is probably true that Canter's most well-known contribution to the industry this year was his inadvertent transmission of the "Peace Message" virus to half the copies of *FreeHand* in Aldus' first production run. But that's not why he's on the list, even though last March saw plenty of peace messages around the old *MicroTimes* offices. No, it's because Canter and the folks at MacroMind spent another year working on their revolutionary *Videoworks* and its various drivers, causing phenomenal growth and innovation in the field of Mac-based desktop presentations and demos.

Cathy Carlston, Doug Carlston, Gary Carlston
Brøderbund Software

It's been another year of high-quality, award-winning software for Brøderbund, which combines an obsession with excellence and responsiveness to its users with the finest qualities of a family business. Among this year's noteworthy endeavors—support for Tandy's DeskMate operating environment, which brings a low-cost windowing interface to the most low-budget PC clones, new graphics and publishing software for Macintosh users, and the advent of an online (changed weekly) version of the popular *Carmen Sandiego* series on the Prodigy service.

Frank Caufield, *General Partner*
Kleiner, Perkins, Caufield & Byers

As one of the industry's leading venture capital organizations, KPCB backs companies which amount to a Who's Who of high tech: Lotus, Ansa-Borland, Compaq, Sun, Symantec, Sybase, Wyse, Quantum and many others. It also encourages a high degree of cooperation among those companies, a policy which has led to many of this year's notable strategic alliances. In addition to his high-tech endeavors, Caufield spent part of the last year in the horizon-broadening activities of traveling in China and backing Boz Scaggs' new blues nightclub Slim's.

Dennis Chang, *President and CEO*
Jasmine

One of the first to recognize the importance of the Mac storage market, Chang established Jasmine as a mail-order business, selling low-cost but highly reliable hard disks. His policy of responsiveness to customers led to Jasmine's practice of designing new products to incorporate requested features; he's also been known to decline to offer products that didn't measure up to his own standards of low cost and maximum reliability.

As Jasmine moved from a predominantly mail-order company to an increased presence in the dealer channel, the company continued to maintain a deserved reputation for responsiveness and excellent quality among its users. Its growing variety of storage devices for the Macintosh found unprecedented acceptance, and the company continued aggressive efforts to upgrade and enhance its product line while keeping the rock-bottom prices its faithful users have come to love.

Balance of Power: The Reorganization Of Apple

As Apple Computer pursued its announced goal of becoming a $10 million company (a process it apparently decided to accelerate by raising its prices in the fall), it spent most of this year hiring new people and restructuring its organization to the point that it's increasingly hard to tell the players without a scorecard. As Chairman/CEO John Sculley spent the summer on sabbatical, there were dramatic changes in the ranks of his immediate subordinates and rampant speculation as to Sculley's heir apparent when he decides to move on. The dust hasn't settled yet, as Cupertino buzzes with talk of chaos in the ranks and turf wars among the executives.

In August the company was revamped in a move that split Apple into four divisions, each with its own president. Longtime Apple veteran Del Yocam was appointed president of Apple Education and Apple Pacific; Michael Spindler assumed the presidency of Apple Europe. Meanwhile, erstwhile product development vice president Jean-Louis Gassee (he who showed up for the DEC-Apple press conference in a sober gray suit and a flamboyant diamond earring) was appointed president of Apple products, where he exerts significant influence on the company's future direction by supervising its research and development effort. Also rapidly rising was the star of relative newcomer Allan Loren, who was appointed president of Apple USA.

October saw further realignments, as Yocam announced his intention of leaving Apple on the occasion of his tenth anniversary with the company in November 1989. While he continues to supervise and develop Apple Pacific and look for his own replacement, Apple Education—one of the company's key markets—has been reassigned to Loren's division.

Observers seem to be eying Gassee and Loren as the likely contenders for Sculley's job. Since Sculley hasn't given any indication that he's planning on going anywhere, this speculation is, for the moment, mostly hypothetical. Still, both men have enjoyed rapidly-ascending fortunes in recent months and will undoubtedly wield increasingly strong influence as Apple continues its expansion.

Neil Colvin, *Chairman of the Board, Chief Scientist and CEO*
Phoenix Technologies

A long-time veteran of software development, specializing in operating systems and programming tools, Colvin founded Phoenix in 1979. The leading purveyor of BIOS code for Intel-based machines from the original PC to the current crop of 386es, Phoenix exerts a profound influence on existing and impending technology. Its continuing research and development will remain a significant element in future generations of machines and the strategies of the companies who manufacture them.

James H. Clark, *Chairman*
Ed McCracken, *President and CEO*
Silicon Graphics

In its relatively short existence, Silicon Graphics has acquired a reputation for excellence in the area of real-time 3D workstations in the engineering and scientific marketplace. Until this year, though, their machines were too expensive to attract large numbers of users for general computing purposes. This year, however, with the introduction of the $16,000 Personal Iris workstation, Silicon Graphics made RISC-based performance relatively affordable, a move which is likely to have a profound impact on high-end Mac II and 80386-based workstations as well as on the acceptance of the fabled NeXT machine itself—particularly since SG is committed to reducing its prices still further as the Personal Iris begins to ship in quantity.

Bruce Davis, *President and CEO*
Mediagenic
Chairman of the Board, **Software Publishers' Association**

Davis presided over a major restructuring of Activision, which had been plagued by the boom-bust cycles of the home-entertainment market, into the diverse Mediagenic, comprised of separate divisions which address business-productivity, presentation and entertainment markets. Mediagenic's software offerings this year included substantial *HyperCard*-based tools, establishing the company as a leader in that market. This year Davis also served as chairman of the Software Publishers' Association, which promotes and supports the software industry with programs ranging from the annual SPA Software Awards to the national Computer Learning Month campaign.

All Computers Are NOT The Same

386 20 MHz

- 20/16/8 Speed
- 1MB RAM on board (exp. to 10 MB)
- 200 W Power Supply
- AT Deluxe Case
- Floppy/Hard Disk Controller
- 1.2MB Floppy Disk Drive
- Mono/Graphic Card w/Printer Port
- 12" Monochrome Monitor
- 101 Keys Keyboard

$1880

16 MHz 286

- 200 W Power Supply
- AT Deluxe Case
- 1.2MB Floppy Disk Drive
- Floppy/Hard Disk Controller
- 512K RAM (exp. to 1MB)
- Mono/Graphic Card w/Printer Port
- 12" Monochrome Monitor
- 101 Keys Keyboard

$1250

12 MHz 286

- 200 W Power Supply
- AT Deluxe Case
- 1.2MB Floppy Disk Drive
- Floppy/Hard Disk Controller
- 512K RAM (exp. to 1MB)
- Mono/Graphic Card w/Printer Port
- 12" Monochrome Monitor
- 101 Keys Keyboard

$955

w/20MB hard disk $1,195
w/40MB hard disk $1,335

XT 10 MHz

- 4.77/10 MHz Speed
- One 360K Floppy Disk Drive
- Serial/Parallel/Game Port
- Clock/Calendar
- 512K RAM (exp. to 640K)
- Mono/Graphic Card
- 12" Monochrome Monitor
- Case w/Key Lock, 3 Led's, Reset & Turbo Buttons
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(213) 921-7206
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Torrance, CA 90502
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Company Leasing Plans Available

MicroTimes 100

Computers: A Family Affair

While many companies like to think of themselves as one big happy family, we find quite a few actual family businesses in various aspects of the microcomputer industry.

The first family of software is undoubtedly the Carlston clan of Brøderbund Software. Brothers Doug and Gary founded the company to market some games Doug wrote during a long New England winter, and the rest is history. Doug is now president and CEO, Gary Chairman of the Board and Senior Vice President of Planning and Strategic Development; their sister Cathy is Vice President of Education Market Planning. Quite often Brøderbund products will draw their inspiration from one of the Carlstons' ideas—the popular *Carmen Sandiego* series, for instance, arose from the brothers' childhood fascination with almanacs, *Fantavision* from Gary's interest in animation, and the much-praised *Science Toolkit* series from Doug's fondness for scientific experiments.

No account of the family business would be complete without taking note of the Tramiel family, father Jack and his sons Sam and Leonard. Their acquisition of Atari a few years ago brought about a resurgence in the company's fortunes and a series of powerful, low-cost computers on the market. Not much has been heard from Atari this year, but we expect it and the Tramiels to be back in customary force in the near future.

In the retail world, we find the Fry brothers, who did the family grocery business one better and started the ultimate supermarket for technoids, Fry's Electronics, a legendary establishment which expanded to a second location this year. As the reclusive brothers work on mysterious software projects, hordes of happy shoppers flock to what's probably the only establishment to stock chips of both the silicon and tortilla persuasion.

It's not necessarily all rosy in the family business, though. Consider Kaypro, which has often encountered problems in dealing with rapidly-changing markets. Chairman and founder Andrew Kay recently ousted his son David from the company presidency, and is currently serving as acting president himself while looking for a replacement.

The Carlstons of Brøderbund: Software is the family business.

Fred Davis, *Editor-In-Chief*

MacUser

Since its acquisition by Ziff-Davis and with Davis's excellent management, *MacUser* has rapidly become one of the most valued resources available for Macintosh users. It has nearly doubled in size in the past year, providing in-depth discussion of products and practical advice on the occasional tribulations of Mac ownership. In accordance with Davis' high standards, *MacUser* is working hard to earn and keep its growing number of devoted readers.

PHOTO: TOM UPTON

Michael Dell, *CEO, Chairman of the Board*

Dell Computer

This year the former PC's Limited continued to expand its leadership in the clone arena, extend its direct-sales marketing and improve the performance of its products. Dell's company was also one of the first to reach an agreement with IBM to license the PS/2's Micro Channel technology, a noteworthy move in that it involved agreeing to pay IBM royalties on previous sales of Dell's PC/XT/AT clones. In a move aimed directly at the corporate market, it also instituted an aggressively low-cost leasing program for its machines. While Dell brought in a team of corporate-style management to deal with the company's rapid growth and expansion, he left little doubt about who was in charge of the company he's run since he founded it while still in college.

Brian Dougherty, *Founder and CEO*

Berkeley Softworks

Creators of the windowing GEOS interface for Commodore 64 computers, Berkeley Softworks found increasingly wide acceptance for its product, which brings increased ease of use to otherwise-obsolescent machines. This year saw Commodore itself bundling the GEOS interface with its disk drives; 1988 also witnessed the arrival of GEOS for the Apple II, which gives schools with substantial investments in Apple machines the opportunity to acquire the far less expensive Commodore computers and retain the same operating environment on both machines.

John C. Dvorak, *Columnist*

You love him or you hate him; either way, if you're like thousands of other computer users, you read him religiously. Gadfly, debunker and general cynic, Dvorak put in another year of cutting through hype, serving as user advocate and stirring up controversy whenever things threatened to get dull.

Steve Edelman, *Chairman of the Board, Chief Scientist*

SuperMac

After last year's acquisition of SuperMac by Scientific Micro Systems, it soon became evident that the merger stood to be the undoing of both companies. While SuperMac's products, particularly its line of Trinitron monitors and video cards for the Mac II, were much in demand, SMS found its capital so depleted by the acquisition as to be unable to support SuperMac's growth, as well as its extensive research and development costs. However, SuperMac's founder, the opinionated and often acid-tongued Edelman, is not one to blithely accept such a situation; in a move that will probably benefit both companies as well as Mac users worldwide, he succeeded in orchestrating a management-backed buyout of his company, and we look for SuperMac's rapid return to its leadership role in Macintosh product development.

Larry Ellison, *President and CEO*

Oracle

Ellison's take-no-prisoners approach to software development and marketing may not endear him to his competitors, but it's made Oracle one of the nation's largest (along with Computer Associates, Lotus and Microsoft) software companies and one of the earliest pioneers in SQL-based relational databases in multivendor environments. This year Oracle made some aggressive inroads into the microcomputer world, with announcements ranging from a *HyperCard*-based interface to its database product to support of the EISA bus, all of which are likely to position Oracle favorably in the work environments of the next few years.

Mark Eppley, *President and Founder*

Traveling Software

In 1982, Eppley, a computer consultant with a specialty in accounting applications, founded Traveling Software to develop productivity software for laptop computers. He soon realized that laptop users didn't just need applications, they needed an easy way to let their laptops communicate with other computers, and so the company has been addressing those needs ever since. This year the company came into its own as the demand for portability and connectivity reached new heights. An increasing number of users discovered Traveling Software's range of indispensable products, from storage devices and software in ROM to cables and utilities which allowed laptops of all persuasions to easily exchange data with desktop PCs or Macs. With OEM agreements with most significant vendors of laptop computers, Traveling Software is a key element in the explosive growth of portable computing.

PC Software for $3.49

Thousands of IBM/Compatible Public Domain and Shareware Programs
Are Available from the Micro Star Library, and All Priced at **Only $3.49/Disk**
We feature the best and most up-to-date shareware available.
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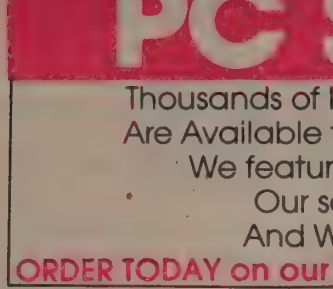
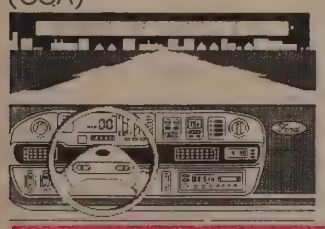
GAMES

ARCADE GAMES (106) Has Kong, 3-D Pacman, Bricks, Pango. (Requires color.)
BASIC GAMES (107) Pacman, Lunar Lander, Startrek, Meteor, Breakout, and others.
CARD GAMES (109) Canasta, hearts, draw poker & bridge.
STRIKER (110) Defender-like game. "Top Gun" in space.
FLIGHTMARE (112) Futuristic fighter pilot game. (Requires color graphics adapter.)
SLEUTH (117) Who done it?
DND (119) Like Dungeon and Dragons.
ROUND 42 (120) Better than Space Invaders. 42 levels.
GAMES IN BASIC (124) Lander, biorhythms, desert, Phoenix, Star Wars, others.
QUEST (152) Role playing adventure fantasy game. (Requires CGA.)
SPACE WAR (158) Dogfight in outer space, using phasers, photon torpedoes, etc.
BRIDGE PAL (171) Complete game of contract bridge, with tutorial.
FENIX (193) Just like the famous arcade game.
PINBALL GAMES (197) Pinball, Rain, Twilight Zone, Wizard, etc.
KID-GAMES (GAM8) Animals math, clock game, alphabet, etc.
CHESS (GAM9) Incredible. 2D and 3D. Many levels. Play back moves, store games.



EGA RISK (GAM11) World domination in great color. Includes EGA Asteroids.
PC PRO-GOLF (GAM27-28) Great graphics. Complete 18 hole, 72 par course. (CGA)
PEARL HARBOR (GAM32) Shoot down Jap Zeros before they destroy U.S. Fleet. (CGA)
ULTIMA 21 DELUXE (GAM34) Best Blackjack game around. Includes Video Poker.
FORD SIMULATOR (GAM37) Great driving simulation. (CGA)



MUSIC

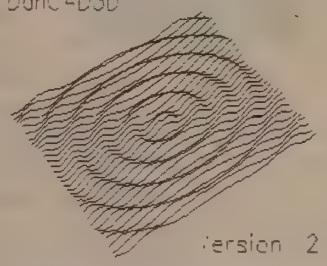
PIANOMAN 3.2 (301) Turn your keyboard into a piano.
PC-MUSICIAN (302) Compose, save, and play music.
CHRISTMAS SONGS (311) Play your favorites on a PC.

WORD PROCESSING

PC-WRITE 2.71 (401-402) (2 disks) Latest version of this popular program w/spelling checker.
PC-TYPE+ (421-423) (3 disks) Excellent. Includes mail merge, 100,000 word spelling checker. Interfaces with PC-File+, PC-Style.
MAXI-MAX (432) 59 macros to use with Word Perfect 4.2 or later. 11 templates for forms, border designs, etc.

GRAPHICS

KEYDRAW CAD SYSTEM (1001, 1002, 1065) (3 disks) Popular. Also uses mouse. (Requires color graphics - CGA.)
DANCAD 3-D (1051, 1052) (2 disks) Create 3-D graphics. Rotate, magnify, etc. Runs on CGA, EGA, or Hercules.



SIDEWAYS (1007) Prints text sideways. Useful for spreadsheets.
SIMCGA/HGCIBM (1027, 1062) (2 disks) Use with Hercules graphics card/ compatibles to run programs requiring CGA on your monochrome PC.
IMAGE 3-D (1048) Create and edit 3-D objects. Move, scale, rotate and tip image.
FINGERPAINT (1050) Use keyboard or mouse to draw. Like MacPaint. (Requires CGA or EGA.)
FANTASY (1057) Create flowing graphic images with mouse or keyboard. (CGA).
FLOWCHARTING (1078-1079) Complete system for flowcharts, organizational, electrical, etc., with symbols.

RELIGION

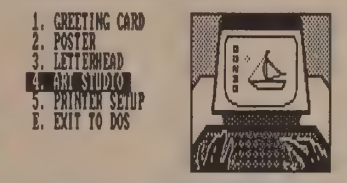
THE BIBLE (3301-3306) (6 disks) Old Testament, King James version.
THE BIBLE (3307-3308) (2 disks) New Testament, King James version.
WORD WORKER (3309-3310) (2 disks) Bible search program. New Testament, King James version.
BIBLEMEN (3330) Excellent Bible quiz program.

BASIC

PC-PROFESSOR (1401) BASIC tutorial. Good.
BASIC PROGRAM GENERATOR (1402) The menu driven way to write programs.
B-WINDOW (1407) Give windowing capabilities to your Basic program.

UTILITIES

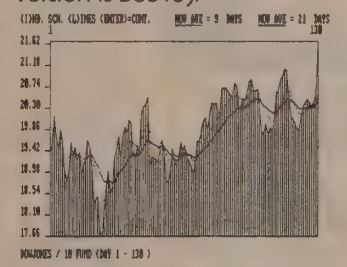
HOMEBASE (2608, 2612, 2613) Complete desktop organizer. Great!
LIGHTNING PRESS (2718) Printshop clone. Includes graphics for many uses.



PROFESSIONAL MASTERKEY (2805) Like Norton's. Retrieve deleted files. A lifesaver.
BAKER'S DOZEN (2821) 13 utilities from Buttonware.
AUTOMENU (3003) Make PC menu driven. Incl. passwords.
SCREEN (3006) Save your monitor from screen burn-in.
DOT MATRIX FONTS (3061-3062) (2 disks) Print your text in different fonts. Works with most printers.

ACCOUNTING/FINANCE

MARKET CGA (BUS17) Performs sophisticated analysis on stocks, funds, etc. (EGA version is BUS16).



BILLPOWER+ (BUS40) Bill clients for time and materials, advances, retainers, etc. Computes taxes, past due interest, etc. Has full G/L.
CPA LEDGER (706-708) (3 disks) Complete general ledger for corporations, partnerships or sole proprietors.
PERSONAL FINANCE MANAGER (715) Household budget manager. Keep track of checking, savings, investments.
PAYROLL USA (725-726) Up to 2,000 employees in any state. dBaseIII and Lotus compatible. Complete P/R system.
EXPRESS CHECK (786) Check acount with running balance, monthly reports, etc. Prints checks.
FINANCE MANAGER II (774-775) (2 disks) For personal or small business financial management.

SPREADSHEETS

AS-EASY-AS (505) Great. Includes screen help menus. Utilizes function keys. A Lotus clone that reads Lotus files.
PC-CALC+ (512-514) (3 disks) Jim Button's famous Lotus clone.

EDUCATION

FUNNELS AND BUCKETS (201) A fun way to learn math.
MATHPAK (202) Tutorial with lessons in higher math.
PC-TOUCH (204) Learn typing.
BASIC TUTORIAL (208) Learn programming with BASIC.
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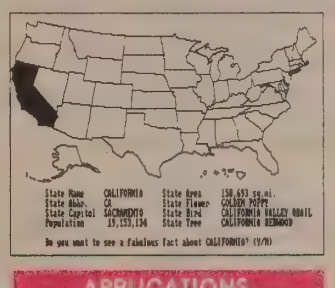
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Ed Esber, *Chairman and CEO*

Ashton-Tate

Last year the future looked a little uncertain for Ashton-Tate, with a great deal of publicity devoted to the long delays in *dBASE Mac*'s shipments, litigation with departed programmers and executives, and a general atmosphere of turbulence. Esber himself seemed more than a little defensive about the company's state, with occasional public outbursts against Ashton-Tate's rivals and caustic remarks about the inadequacies of the managers he fired. A year later, Esber's firmly in control and the company is back with a vengeance, with a solid family of Macintosh business applications (including the memory-hungry but brilliantly conceived *FullWrite Professional*, which Ashton-Tate acquired along with its developer, Ann Arbor Softworks), enhancements to *dBASE Mac* shipped, and the long-awaited *dBASE IV* finally on the scene. Further, the company's alliance with Sybase and Microsoft positions it favorably in the impending database wars, in which the ability to provide power, performance and a transparent interface across operating environments assumes crucial significance.

Gordon Eubanks, *President*

Symantec

As one of the leaders in the transition from single-user to "groupware" applications, Symantec is a sterling example of the cooperative approach to doing business, having been much in evidence this year in announcing support for a wide variety of standards. The engagingly self-effacing Eubanks has led the company through a period of growth and diversification, acquiring products and companies to allow Symantec to address a full range of markets. Committed to developing applications in the DOS, OS/2 and Macintosh environments, Symantec also endorsed the Intel/DCA communications standard and supports Tandy's DeskMate operating environment, which brings a simple windowing interface to the most bare-bones PC and has a profound impact on the home-office and small business market

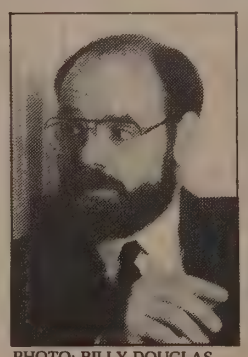

PHOTO: BILLY DOUGLAS

Tim Farris, *President and Founder*

Boca Research

One of relatively few manufacturers of expansion boards that design and manufacture their products in the United States, Boca continues to refine and innovate in its continuing campaign to bring power and efficiency to PC users. Himself a distinguished engineer who designed the first standard EGA board, Farris sets the standard of quality and dedication for his company and an example to the industry.

Manny A. Fernandez, *President and CEO*

Dataquest

For those whose livelihoods depend on making sense of the often confused and complex high tech industries, the skilled analysts of Dataquest provide invaluable information and insight with their reports and seminars. Under the leadership of Fernandez, the company has expanded its range of products and services, strengthened its presence in overseas markets and increased its influence and prestige.

Clifford Figallo, John Coate, David Hawkins, Robin Gail Ramsey And A Cast Of Thousands

The WELL

In one sense, The WELL, Whole Earth's conferencing system, is a creaky old VAX, a temperamental disk or two and a whole bunch of phone lines and modems that work most of the time. In another, it's a resident—and growing—population of intelligent people who "meet" to discuss an amazing variety of subjects, from Artificial Intelligence to Z88 laptops, with stopovers in such scenic hamlets as Forth, Macintosh, Television, True Confessions and Grateful Dead. Considerably to the surprise of naysayers, this freewheeling endeavor has not only stayed afloat but has managed to grow and become profitable. History will undoubtedly make much of the WELL as a pioneering revolutionary in telecommunications; as WELL users, we'll settle for giving its staff and users a much-deserved salute for keeping the experiment-in-progress alive and interesting.

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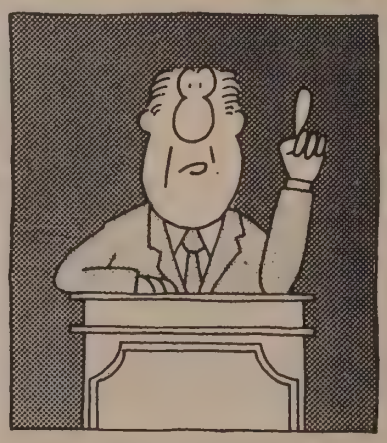

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John Frank, *President*
Zenith Data Systems

It's been another good year for Zenith. Most notably, as the portable computer becomes increasingly indispensable to a wide variety of business users, Zenith has been very successful in providing thousands of users with state-of-the-art laptop technology, most recently with its new line of lightweight, powerful SupersPort models. President Frank has also been instrumental in Zenith's successful overall strategy of targeting products to the educational, technical and corporate marketplaces.

John Fry, David Fry, Randy Fry, Kathryn Kolder
Fry's

This year the ultimate electronic supermarket (and tourist attraction) continued to bring its unique brand of computer merchandising to hordes of satisfied customers. In a move much hailed by East Bay techies, the operation has expanded with the opening of a second store in Fremont. Persistent rumors floating around the Valley report that John Fry has written a specialized software application which is used to administer the entire business; further rumors have it that he's currently working on porting the software to the NeXT machine.

Bill Gates, *Cofounder and Chairman of the Board*
Microsoft

It's been a turbulent year for Gates and Microsoft, what with look-and-feel lawsuits here and IBM's bet-hedging acquisitions of NeXT and Metaphor interface technology (which, according to some analysts, casts a certain doubt on the future of Presentation Manager as the Big Blue interface of choice) there. Nonetheless, the software giant enthusiastically continued business as usual, releasing a new version of DOS, shipping OS/2, bringing out enhanced versions of *Word*, and generally maintaining its dominant position in the programming and operating system arenas in the micro world. Gates himself was a hard-working and persistently affable spokesman and promoter for his company, to the extent of staging an elaborate display of good fellowship with Apple and downplaying the importance of its look-and-feel lawsuit against Microsoft. So successful was he in his role as goodwill ambassador that his uncharacteristic lack of enthusiasm for the NeXT workstation attracted nearly as much attention as the machine itself.

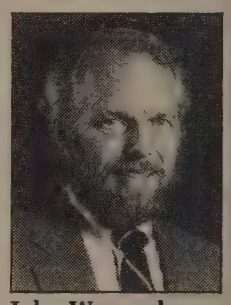
Vladimir Gerasimov, Alexey Pazhitov
Authors of Tetris

Glasnost, schmaznost. We know perfectly well that *Tetris* is a fiendish plot to sap the productivity of American workers by instilling in them an insatiable desire to build pleasing arrangements of colored boxes. And as for all that nice Russian music and lovely scenery from the USSR—there's probably some dark subliminal message in there too. Works pretty good, guys. What are you working on for next year?

Charles Geschke, *Executive Vice President*
John Warnock, *President*
Adobe

Warnock and Geschke founded Adobe in order to develop and market PostScript, a page description language descended from their work at Xerox PARC. The growth of PostScript and that of desktop publishing have been rapid and symbiotic, with the language a favored standard for output devices and font generation. Adobe had another groundbreaking year in 1988 with the unveiling of Display PostScript, the ultimate what-you-see-is-what-you-get screen display, on the NeXT workstation; other platforms are expected to follow. Meanwhile, Adobe also expanded its software operation considerably, with a burgeoning library of downloadable fonts and the PostScript graphics program *Illustrator 88*, successor to last year's revolutionary *Illustrator*.

Charles Geschke


John Warnock

Nat Goldhaber, *General Partner*
The Cole Gilburne Fund

Now that he's sold TOPS to Sun Microsystems, where its product is an integral part of Sun's "The Network Is The Computer" strategy, Goldhaber has moved on to the world of venture capital with Cole Gilburne. Currently he's on the board of

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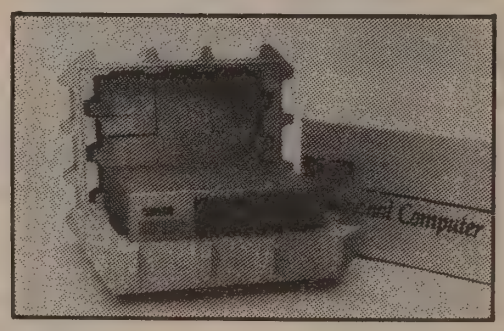

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MicroTimes 100

PHOTO: PAT JOHNSON

directors of Shiva Corporation, in which Cole Gilburne has a considerable interest. Not surprisingly—Goldhaber has a long-time interest in networking, and Shiva currently makes the popular NetModem for AppleTalk networks and promises a range of products for networking applications.

Danny Goodman, *Author*

As author of the first *HyperCard* text, *The Complete HyperCard Handbook*, and of *Focal Point*, one of the first and most useful *HyperCard*-based applications, Goodman has made a great contribution to the rapid acceptance of *HyperCard* itself and to the phenomenal increase in easy-to-use tools as a result. To say nothing of the growth in sales of the Macintoshes those tools require.

Judge Harold Green

RBOC Breakup

As the chief magistrate in charge of administering the breakup of the Regional Bell Operating Companies (local telephone companies), Judge Green determines which enhanced services, if any, the local companies can provide in competition with outside vendors, which makes him one of the most influential forces in determining the future of computer-based communications. This year he determined that the RBOCs may provide network administration, voice mail and email services to its customers; however, he also continued to bar them from becoming information providers because of the significant hazard that they would thereby become a monopoly in the information-service arena.

Alan Hald, *Chairman of the Board*

MicroAge Computer Stores

In addition to guiding his company through a successful program of growth and expansion, Hald serves as one of the leading voices of the dealer channel. This year he was elected Chairman of the Board of ABCD: Microcomputer Industry Association, the trade organization of computer resellers, where he's worked aggressively to keep dealers abreast of changes in the industry, particularly as the market evolves toward greater importance of the VAR channel and extended customer support.

Trip Hawkins, *President and CEO*

Electronic Arts

Founded as one of the ultimate fun-and-profit companies by Apple veteran and entertainment buff Hawkins, who's still reputed to go to over 100 movies a year, Electronic Arts has undergone a considerable evolution from its origins as a purveyor of state-of-the-art games (an endeavor it hasn't abandoned). Though its product line now extends far beyond games, all EA offerings retain slick presentation, great graphics and a certain irresistibility. One of EA's particular strengths this year is the advent of a full range of sophisticated graphics tools for the Amiga, ranging from paint and draw programs to video applications. Also, this year EA entered the Mac II graphics workstation world with the shipment of *Studio 8*, a sophisticated high-end paint program.

Mark Hoffman, *President*

Sybase

In 1984, Hoffman and some colleagues from Britton Lee founded Sybase to develop flexible, software-based relational databases in high-volume applications, where data integrity and reliability are vital. Sybase has established itself as a leader in SQL-based client-server architecture, providing large numbers of simultaneous users with applications to access and manipulate very large databases. As Hoffman put it earlier this year, "I think automation may actually help people understand and comprehend massive changes that are happening in the marketplace. It allows the individual to have a lot more power than he's ever had."

1988 may well be recorded as the year of the strategic alliance, and certainly Sybase, which has attained a strong presence in the Pyramid workstation, DEC-VMS and UNIX worlds, emerged as the ally of choice for some of the biggest names in the micro industry: Microsoft and Ashton-Tate joined forces with Sybase to develop SQL-Server, positioned as the standard OS/2 relational database server; Apple, meanwhile, invested in the company as part of its strategy to get Macs into the DEC environment.

Dave Hughes

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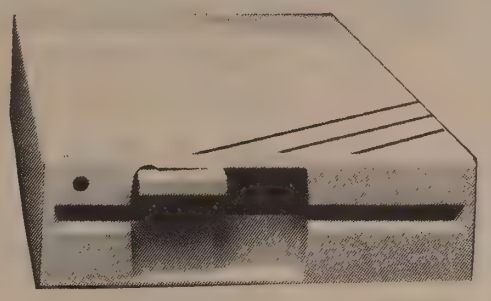

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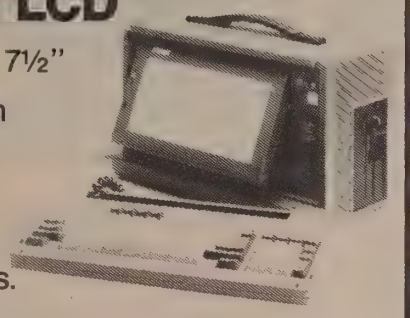

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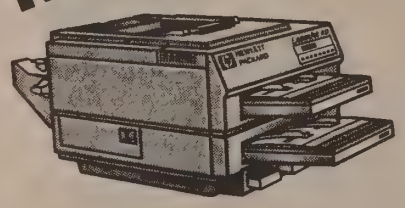

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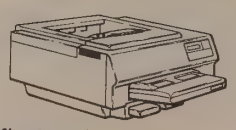

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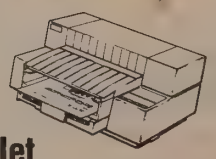

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MicroTimes 100

screaming into the Electronic Age (getting the entire city council online and networked, and the local Republican party modemized in self-defense), Hughes did not rest on his laurels this year. He launched Space Net at the United States Space Foundation, providing rural schools with online access to math, science and space experts in places like the Air Force Academy. He continues his quest for autonomy from the phone companies via packet radio. And finally, he succeeded in implementing a connection between Moscow's Novosti News Agency, the Tokyo-based Twics service, Chariot and a local magazine in Colorado Springs, by which questions, answers, essays and articles reach audiences that haven't been able to talk to each other too much in the past. "Already," says the indefatigable Hughes, "we have communicated with Cosmonauts, the Soviet Space leaders (inviting them to a space symposium in Colorado), and the head of the Academy of Sciences on environmental matters, Central Committee members on mutual global problems. We've let local reporters quiz the Soviet Press, and are arranging school-room to school-room telecomm links. We let the local public dial in and pose questions of their own—a construction worker asked why one can't buy Levi's in Moscow. We communicate at least weekly, and get turnarounds in two days."

We await next year's report with interest...

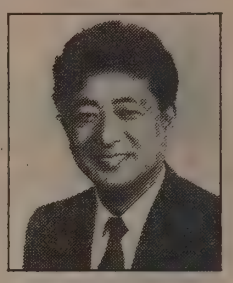
Steve Hui, *President, CEO and Director*

Everex

The somewhat retiring Hui, who's been known to characterize his company as a traditional Chinese family business, has led Everex in a intensive program of growth and expansion this year. Having previously specialized in peripherals and PC clones OEMed for other vendors, Everex began building (in Fremont) its own line of 386-based machines, and, by acquiring companies such as Abaton Technology, positioned itself to take advantage of emerging applications and markets.

Kiichi Hataya, *President, Industrial Electronics Business Sector*

Toshiba America



Despite a good deal of turbulence and political upheaval last year, Toshiba has continued to do a booming business and expand the operations of its US-based division. In particular, the year has been noteworthy for the phenomenal sales of Toshiba's laptop computers, which continued to provide a wide variety of power and price points to a growing number of business users. Hataya, who assumed the helm of the division from Kazuo Ishiguro last summer, continues to provide strong leadership and an emphasis on technical excellence.

Charles H. Jackson, *Founder, President and CEO*

Silicon Beach

For sheer diversity and excellence of Mac software, Silicon Beach is a hard act to follow, with games like *Dark Castle* and its successors as well as a full range of graphics products. Under Jackson's leadership, the company has maintained high standards of quality and innovation, and its products provide unprecedented capabilities in image creation and manipulation.

Bob Jacobson, *Consultant, Assembly Committee on Utilities and Commerce*

As a consultant in Assemblywoman Gwen Moore's office, Jacobson worked to increase public awareness of crucial issues affecting electronic communications. He was responsible for setting up the Capitol Connection BBS, a pioneering effort at electronic access to legislators. As the march of technology raises new questions of constitutional protections, privacy and access to technology, Jacobson provides a wealth of information resources and helpful advice to those exploring the potential of electronic democracy.

Ash Jain, *President*

Irvine Resource Group

One of the prime movers in AST Research's success in the Apple and Macintosh market, Jain left AST last year to found the Irvine Resource Group. His company serves as a business and market development consulting service, again with emphasis on the Apple market, and also publishes the Macintosh Market Report,

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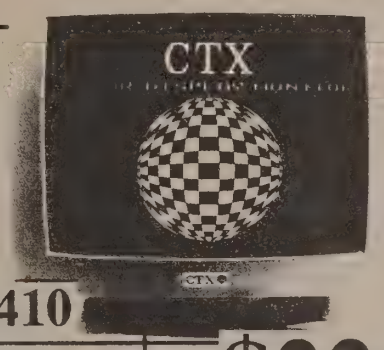

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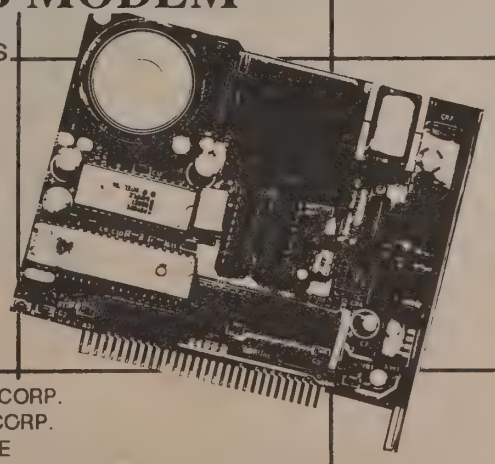

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Steve Jobs, *President and CEO*
NeXT

After gigabytes of speculation about the fabled NeXT machine, the world finally got its first look at Jobs' latest brainchild on October 12. This, in turn, spawned gigabytes of debate as to the machine's technical merits, its viability, and a host of other matters which will remain largely speculative until at least spring of 1989. While the NeXT, its Mach operating system, its read-write optical disk and Display PostScript visuals will probably be heatedly discussed for years to come, two things are clear: everybody seems to want one of the machines, and, for Jobs-boosters and -bashers alike, suddenly things are a lot livelier around the industry again. Meanwhile, many observers have noted that the notoriously temperamental Jobs seems to have matured considerably, fueling speculation that he's better prepared for the practical realities of running a company than in the days of his renowned caprices and tantrums at Apple.

Reese Jones, *President*
Farallon Computing

Several years back, BMUG president/cofounder Reese Jones unveiled the hacker's answer to AppleTalk networks—BMUGnet, constructed from standard phone-company parts and considerably cheaper than the Cupertino Solution. With the passage of time, Farallon was founded to market the product, rechristened PhoneNet, which is today a favored standard in Mac and TOPS multivendor environments. This year Farallon worked aggressively to expand and enhance its range of networking products, and continues to be among the best in the industry at providing quality, low-cost solutions to the problems of networked environments.

Bill Joy, *Vice President of Research and Development*
Sun Microsystems

As Sun aggressively expanded its operations this year, resident wizard Joy remained the most renowned spokesman for its core beliefs: open architecture, industry-wide standards and cooperation among vendors. He periodically emerges from the hallowed halls of R&D to address ever-larger audiences, with matter-of-fact aplomb, on the inherent evils of proprietary interfaces and the importance of standards for the health of the industry. Some observers have noticed with concern that Joy has been seen to wear a tie on some of those occasions, fueling speculation that Sun is Going Corporate.

Philippe Kahn, *Chairman, President and CEO*
Borland International

While this has been a somewhat turbulent year for Borland, with much-publicized restructuring and first-ever layoffs, Kahn has made considerable strides in bringing his company into serious competition with the likes of Lotus and Ashton-Tate. As Lotus continued to delay the release of the updated *1-2-3*, Borland's internally-developed *Quattro* won hordes of users away from the dated spreadsheet. Meanwhile, Borland's Ansa division enjoyed considerable success with its *Paradox* database and renewed its commitment to develop identical-interface versions across machine and operating system lines. And finally, the ebullient Kahn made it perfectly clear that he was still in charge of his maverick software house and was largely successful in resisting the encroachments of creeping corporatism into Borland's company culture.

Mitch Kapor, *Founder, Chairman, CEO*
ON Technology

As co-author of Lotus *1-2-3* and *Agenda*, Kapor has already distinguished himself as one of the founders and powers-that-be in the micro industry, and it's highly probable that the projects he's working on now at his new company will be at least as revolutionary. In retrospect, however, his most prescient and noteworthy accomplishment was probably that of dissociating himself from Lotus, a company he himself founded, because he didn't like the look of its general direction, particularly its look-and-feel lawsuit. Some of this year's events, including an apparently infinite series of delays in shipping *1-2-3*'s Release 3 and the abandonment of *Modern Jazz*, the update to the ailing *Jazz*, to say nothing of the interminable look-and-feel suit, suggest that Kapor made a wise decision.

On The Horizon
Some people and companies to watch in 1989:

Tom Campbell, Congressman-elect, 12th District. As we reported last spring, the youthful Stanford law professor garnered strong support from the high-tech industry in his bid for election in the district which includes most of Silicon Valley. Such strong support that he managed the rare feat of bringing together Intel's Robert Noyce, Apple's John Sculley and Sun's Scott McNealy (the latter complaining about having to put on a suit on Saturday morning) at a press conference to endorse his candidacy. With his strong background in economics and lively awareness of trade issues, we look to Campbell to work for intelligent, progressive legislation affecting the computer industry.

Congressman-elect Tom Campbell won strong support from the high tech industry.

Jack, Sam and Leonard Tramiel, Atari. The Tramiels have kept a relatively low profile this year, as have many of their announced-but-unshipped products. Perhaps their acquisition of the Federated discount chain has kept them more occupied than they expected. Nonetheless, their current crop of products has a seriously dedicated user base, and their fans eagerly await the advent of the fabled Atari transputer and other delights.

Roger Gregory et al., Xanadu Operating Company. Now part of Autodesk and enjoying some much-needed financial support, the Xanadu development team is hard at work readying their as-yet-unannounced first commercial product formarket and inviting inquiries from would-be developers of related products.

Todd Rundgren, Utopia Software. While we can neither confirm nor deny the rumor that Rundgren's designed a new Mac interface which greets the user with "Hello, It's Me" rather than "Welcome to Macintosh," we do know that interface design is one of his major interests and that he was showing off some neat stuff at the Hackers Conference. So we hope some of his efforts appear in a computer emporium near us Real Soon Now.

Guy Kawasaki, *President*
Acius

With the same fervor he brought to Apple's software evangelism program a few years ago, Kawasaki continues to guide his infant company and the evolution of its flagship product, *4th Dimension*. This year saw aggressive efforts to enhance the product and enlist the efforts of developers in creating third-party applications based on *4D*, making inroads in mainstream and niche markets.

L. William Krause, *President and CEO*
3Com

As networked and multiuser environments become an increasingly popular solution to the computing needs of many businesses, 3Com offered its customers increasingly diverse options, including the economical diskless 3Station terminals. It also supported a wide range of PS/2 and DOS applications, and offered a sophisticated range of options in PC-to-host connectivity.

David Liddle, *Chairman; President, Software Products Division*
Metaphor Computer Systems

As chairman and co-founder of Metaphor, which develops and markets workstations for data-intensive applications, Xerox PARC veteran Liddle has been a distinguished pioneer in the field of graphics-based user interfaces. This year, Metaphor entered into an agreement with IBM to exchange office systems technologies; under the terms of the agreement, IBM will incorporate Metaphor object-oriented technology into the interfaces it's developing for decision support applications running in all its computing environments, including OS/2.

William Lohse, *Group Vice President*
Ziff-Davis

Lohse oversees the operation of some of Ziff-Davis' most successful and

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BEST-286 LCD

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- ☐ 1.2 M. Floppy Drive
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- ☐ Dimension 16" x 8" x 9"

$1600

VTI-33 SYSTEM

- ☐ 8088-2 10 MHz
- ☐ **640 K RAM**
- ☐ 2 360K Floppy Drive
- ☐ Serial, Parallel Port
- ☐ Clock, Calender
- ☐ AT Style Keyboard
- ☐ Build in Mono/Color Graphic
- ☐ **MONO MONITOR**
- ☐ MS-DOS 3.3, GW Basic

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COLOR SYSTEM $919

BEST-286 PORTABLE

- ☐ 10 MHZ
- ☐ 512 K RAM
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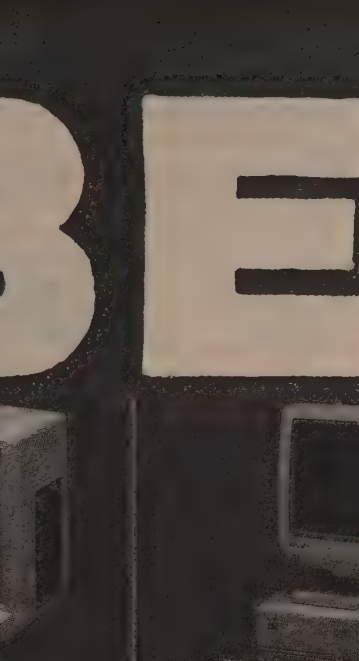

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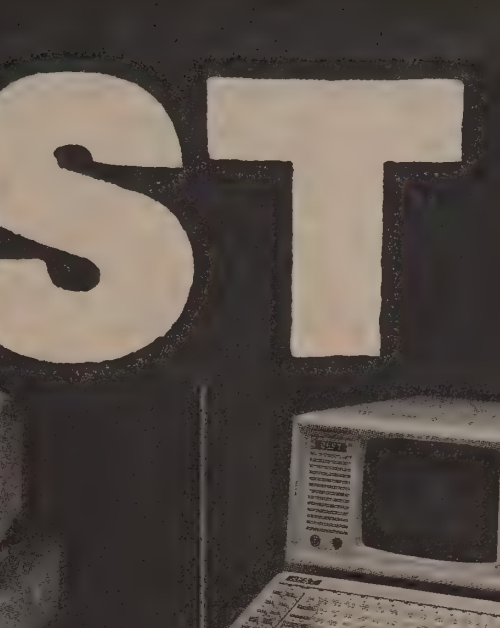

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MicroTimes 100

influential publications, *PC Magazine*, *A+* and *MacUser*. These magazines provide timely and accurate product information to their readers and have become an important support resource in a rapidly-changing industry.

William C. Lowe, *IBM Vice President; President, Entry Systems Division*

IBM

As head of the Entry Systems Division, Lowe is responsible for IBM's personal computer and low-end workstation product line. While last year's announcement of the PS/2 line and OS/2 operating system, and the subsequent debate on the viability of both, contributed to a perception of Lowe as somewhat embattled, the intervening months seem to have gone well. This year he's had considerable success in winning acceptance of the PS/2 computers by dealers and users, as well as commitment to the OS/2 software environment by vendors of nearly all significant business applications. And while it's too soon to tell how well OS/2 will be accepted, the PS/2 line itself is doing very well, with three million units shipped, several new models unveiled, and Lowe insisting that such deviant standards as EISA are merely proof that IBM was right all along.

Marshall Magee, *Founder, President*

Magee Enterprises, Inc.

President, **Association of Shareware Professionals**

One of shareware's great success stories with the perennial hit *Automenu*, Magee offers continuing proof that great software doesn't have to be expensive. Not forgetting the thousands of satisfied users who find *Automenu* a life-saver, Magee, who started the company to put himself through college and is now something of a shareware tycoon, offers excellent support and a variety of creative purchasing options. Additionally, through the Association of Shareware Professionals, he works to advance the cause of high quality and customer support among shareware vendors.

Patrick McGovern, *Chairman*

IDG Communications

Perhaps the most noteworthy development of this eventful year for IDG was the company's work in bringing Western-style personal computing to the Soviet Union, and publishing the first issue of *PC World's* Moscow edition. The effort is expected not only to benefit the US high-tech industry by opening up new markets, but also to provide varied opportunities for better understanding between the two countries. Apparently the first issue of the Moscow edition was plagued by a few communication errors of its own—the Soviet editors pulled most of the advertisements on grounds of "redundancy," and McGovern was forced to make an unscheduled trip to the USSR to explain to his minions that that wasn't exactly the way things *worked*.

McGovern and IDG were also in the news this year for abandoning publication ventures that didn't measure up to their profitability standards; among the casualties were *Macintosh Today* and *Computer Currents*.

Brock Meeks, *Columnist*

In his coverage of telecommunications-related issues, from constitutional protections to the deregulation of the baby Bell companies, Meeks strives to increase awareness and understanding of these world-altering communications media and their implications.

John Meyer, *President*

Ventura Software

Back in 1984, Meyer and some of his colleagues at Digital Research started working on a desktop publishing software package. When DRI wasn't interested, they left to found Ventura Software and develop what was to become *Ventura Publisher*. The product's inherent quality and a marketing-distribution arrangement with Xerox have led to *Ventura Publisher*'s acceptance as a standard in PC publishing. And despite the advent of *PageMaker PC*, the popular *Ventura Publisher* held its own this year in the DOS desktop publishing market, shipping Version 2 with new features and improved flexibility.

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☐ PC-STYLE (#W115) -Used w/Word Processing to Check Writing Style.

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☐ GAMES6 (#G140) - Hack (Dungeons & Dragons Clone).

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MicroTimes 100

Larry Michels, *President*

The Santa Cruz Operation

As office managers surveyed their huge investment in 286 DOS machines, assessed their need for more power and multiuser applications, and looked dubiously at the expense of migrating to OS/2, Michels and his minions smiled and sold them XENIX. Lots of XENIX, which, as the UNIX dialect of choice for Intel machines, enjoyed a banner year with the advent of 386 machines powerful enough to make use of its features, and probably eroded a considerable chunk of OS/2's future market share.

Gwen Moore, *State Representative*

In a protracted and heartbreaking battle, Assemblywoman Moore almost got ACA 36, the Information Age Bill of Rights, through the state legislature. In the face of erratic but forceful opposition and malign neglect, Moore fought tirelessly for ACA 36 and other significant legislation addressing constitutional and other issues involved in computer-based communications, and we wish her well in next year's battles.

Therese Myers, *President*

Quarterdeck Office Systems

With an extensive background in both management and system design, Myers runs Quarterdeck with forthright practicality and devotion to functionality, and a recognition of the connection between Quarterdeck's economic well-being and that of its users. Quarterdeck's flagship product *DESQview* offers a less expensive and very popular alternative to *Windows* for the PC-using population. Again this year thousands of users who want an integrated multi-application work environment without mortgaging their homes made *DESQview* a bestseller, and Myers continued to champion the cause of the power user without deep pockets.

Ted Nelson, *Distinguished Fellow*

Autodesk

After nearly three decades of derision and scorn, the "father of hypertext" began to garner some serious respect in relatively mainstream quarters last year as the technology began to catch up with his it's-all-connected vision of information publishing. This year saw the re-publication (by Microsoft Press) of his *Computer Lib/Dream Machines*, which brought Nelson's ideas to new audiences and the exuberant Nelson himself to scores of speaker's platforms. In a move that still has some analysts scratching their heads, Nelson's Xanadu Operating Company was acquired in April by Autodesk, the leading vendor of CAD applications for personal computers. Nobody seems to be quite sure what this means, but since the acquisition was accompanied by announcement that commercial product will ship within two years, it seems increasingly likely that Xanadu may soon lose its status as the world's longest-awaited vaporware. A more immediate result is that Nelson himself has migrated to California from Texas, and may soon set about the arduous task of recovering 30 years' worth of his writings, now scattered in storage lockers in four states.

The Second Annual Steve Jobs "What's NeXT?" Award

Well, the NeXT machine has materialized, rendering itself and Jobs ineligible for this year's award. However, we didn't have far to go to find this year's recipient: David Bunnell.

Bunnell, founder of *Personal Computing*, *PC Magazine*, *PC World*, *Macworld* and *Publish!*, who recently parted company with publishing giant IDG, announced his latest venture at the NeXT unveiling: Io Publishing. Io's first publication will be a campus newspaper for users of the NeXT workstation.

The name of the newspaper has yet to be announced at presstime, but we shouldn't have too long a wait this time: it's scheduled to start publication in January 1989.

Considerably before the NeXT machine ships, come to think of it. . .

Ed Niehaus, *President*

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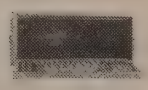

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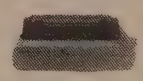

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MicroTimes 100

ful publicist, Niehaus has been very effective at SEF this year, aggressively promoting networking opportunities and bringing new members to the organization in unprecedented numbers.

Raymond J. Noorda, *President*
Novell
Novell remained at the forefront of network technology, announcing numerous products and expanding its range of options. Perhaps most notably, it announced support of the Macintosh by its NetWare product line, thereby greatly strengthening Apple's ability to introduce Macs to the corporate world.

Peter Norton, *Founder and Chairman*
Peter Norton Computing
Between Dewar's ads, Norton continued to expand the scope of his software publishing. The perennial *Norton Utilities* were joined by numerous other versatile tools, and, in a move which may indicate expansion into new markets, Norton also acquired Dan Bricklin's award-winning *Demo II* program.

Robert Noyce, *Vice Chairman, Board of Directors*
Intel Corporation
CEO, **Sematech**
Long a distinguished figure in the high tech industry, Noyce co-invented the integrated circuit and co-founded Intel. This year, after having turned down the job repeatedly and thereby caused a long fruitless search for a suitable alternate, he was persuaded to assume the leadership of Sematech, a research consortium devoted to developing and strengthening US leadership in semiconductor manufacturing; his responsibilities include directing Sematech's manufacturing and support staff as well as serving as its primary liaison between member organizations and the federal government.

Michael Odawa, *President*
Software Development Council
With viruses much in the news this year, the Software Development Council was founded as a national alliance of regional software organizations intent on addressing the problem. Membership includes over 1200 software companies committed to increasing awareness of the genuine threat to the industry posed by the spread of computer viruses, which in the organization's view undermines product integrity, distribution channels, and the public's faith in the product. Under Odawa's leadership, the group's anti-virus strategy operates on a number of fronts, ranging from the development of virus-resistant programming techniques to the drafting of model "release a virus, go to jail" legislation.

Ken Olsen, *President*
Digital Equipment Corporation
Himself the subject of a just-released biography, *The Ultimate Entrepreneur,* DEC founder Olsen made headlines in January when he and other DEC executives joined Apple's John Sculley and Jean-Louis Gassee in announcing one of the year's most important alliances: a plan for both companies to develop improved links between DEC's VAX computers and Macintoshes. While DEC is a considerable presence in the corporate and workstation worlds, its attempts to penetrate the microcomputer market have never been successful; the agreement helped DEC in its ongoing war with IBM while providing Apple with a valuable entry point into DEC's markets.

Adam Osborne, *CEO*
Paperback Software
As the Lotus-Paperback look-and-feel suit dragged interminably on, Osborne managed to score a few points on his rival, not the least of which was shipping a substantially enhanced version of *VP-Planner* at a time when Lotus was busily announcing delays on the release of the new improved *1-2-3.* He also managed to direct a fair amount of public derision at Lotus for its obstructionist legal tactics in the suit. All and all, it was probably a far better year for little Paperback and its user community than it was for the long-suffering devotees of Lotus.

Theodore C. Papes, Jr.,
President and CEO
Prodigy Services Company
A long-time IBM veteran, Papes has presided over the joint IBM-Sears Prodigy venture since its inception in 1984. This year saw the vision become a reality, as the first of what Prodigy hopes will be millions of users dialed up the stylish, low-cost

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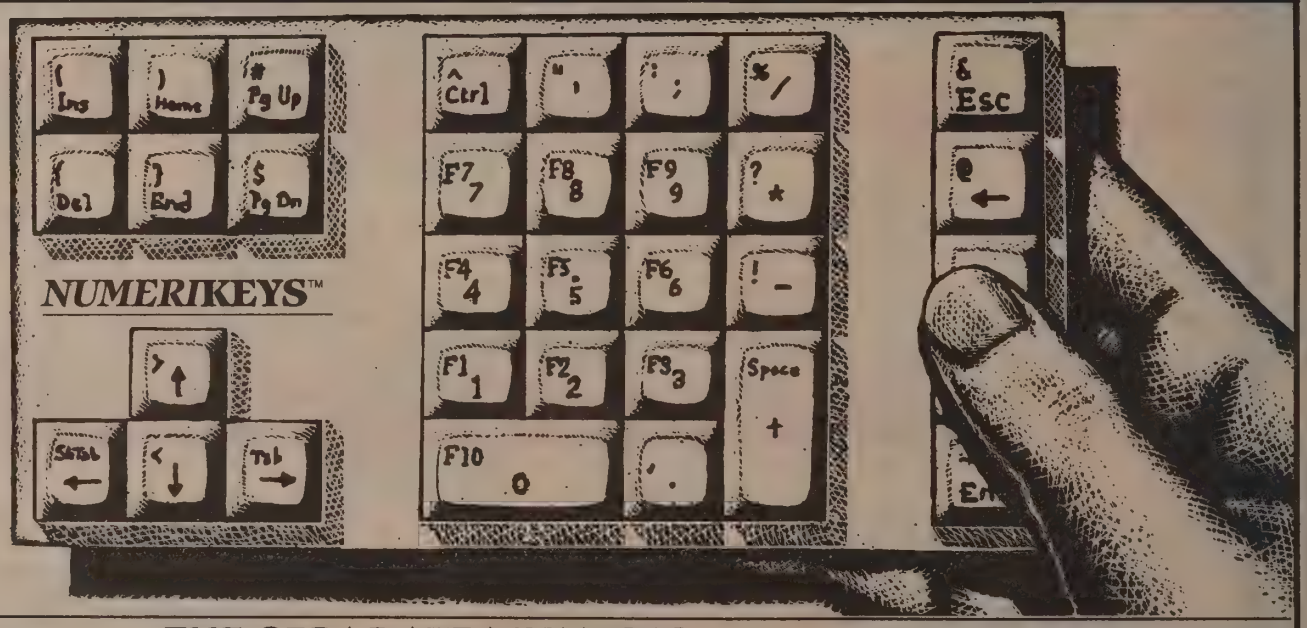

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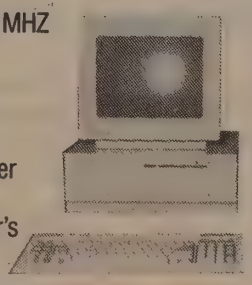

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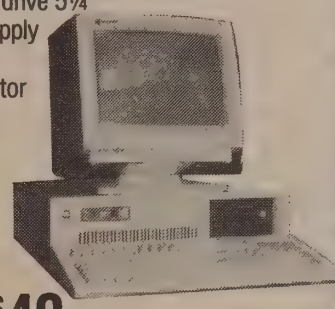

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- Metal Case
- 200 Watt power supply
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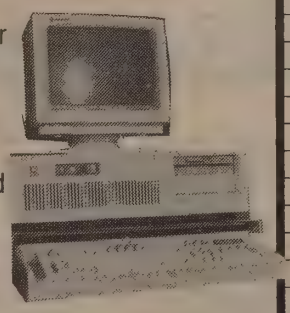

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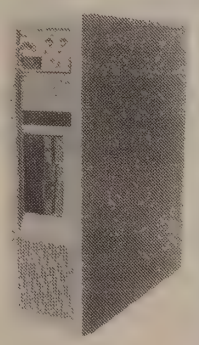

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MicroTimes 100

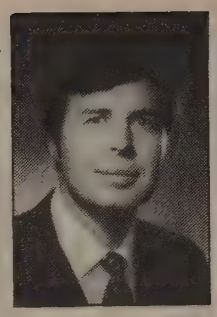
telecommunications service, which offers a variety of information and diversion to its users and a growing client base to its advertisers. While it remains to be seen whether the French Minitel revolution can be duplicated in the United States, Prodigy's relatively mass-market appeal is likely to bring about a huge increase in computer-based communications for an increasing variety of uses.

Joseph L. Parkinson,

Chairman, CEO

Micron Technology

This year Micron found itself in the nearly unique position of being a US manufacturer of suddenly-scarce DRAM chips. While the company made headlines in a legal dispute with Atari's Jack Tramiel over DRAM prices, its chief distinction was in having been in business and shipping product at a time when hardware vendors, desperate for memory chips, debated the pros and cons of building their own chip manufacturing facility. Parkinson himself also wields considerable influence over the development of future US chip technology as a board member of Sematech.



Glenn Patch, *Chairman*

Patch Communications

Patch founded *MacWeek* and this year entered into a joint publishing arrangement with Ziff-Davis. *MacWeek* enjoyed the distinction of winning the war of the Macintosh corporate tabloids, as PCW/IDG's *Macintosh Today* stopped publication this summer. Unlike its rival, *MacWeek* was the first magazine of its kind and was able to become a weekly early on; consequently it attracted a wide audience and a broad base of advertisers *Macintosh Today* (perhaps hampered by insufficient differentiation from its sibling *Macworld*) was never able to match.

H. Ross Perot, *Venture Capitalist*

Member, Board of Directors
NeXT Inc.

Probably it will never be known how much the infusion of Perot's capital had to do with getting the NeXT workstation off the Perpetual Vaporware list, but it probably didn't hurt. The alliance of the mercurial Jobs and the pragmatic Perot will profoundly affect the evolution of workstation technology and the future of the industry itself.

Aubrey Pilgrim, *Author*

One of the true latter-day heroes of the computer revolution, Pilgrim is beloved by thousands of readers who take the advice of his books and articles to build their own computers and save a bundle. His book on building your own PS/2 clone is eagerly awaited.

Dan Pote, *President*

Applied Engineering

Again this year, Pote's company, which specializes in cards and peripherals for the Apple II line, succeeded in marketing and supporting products which continue to stretch the II's capabilities beyond anything Steve Wozniak envisioned—not the least of which was the ability to run DOS software.

Jerry Pournelle, *Columnist*

Opinionated and often unabashedly cranky, Pournelle nonetheless is a tireless user advocate and one of the industry's most active gadflies. His Chaos Manor column is a staple in the lives of computer users nationwide, and his annual rambling discourse at the Computer Faire draws standing-room-only crowds for a sardonic account of the stupidities the industry insists on foisting on an unsuspecting populace. To the bemusement of many observers, no such skepticism attends Pournelle's views on SDI. . .

Abraham Poznanski, *President, Micro Products Division*

Computer Associates International

Like many software houses with corporate customers, Computer Associates was increasingly active in the microcomputer world this year as power and connectivity became key issues. It offers a variety of sophisticated project management, accounting and financial packages, including the *SuperCalc5* spreadsheet, designed to work well with outside applications such as *1-2-3*. Poznanski, who had previously served as senior vice president of corporate

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- One 360KB (Teac) DS/DD Drive
- Monographics card with printer port
- Keytronic 101 Keys Enhanced Keyboard
- Clock/calendar with battery
- Assembled, tested and 48 hours burn-in

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40 MB YES!

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- W/EGA Monitor
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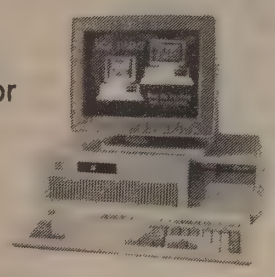

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Centronics		
136B	$365	180 cps, 132 Col.

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- 16 MHz SI = 18 (Option $250)
- 640K RAM
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- Key Board (86 Keys)
- External RGB Adapter
- 640 X 200 Dots
- 640 X 400 (Option $180)
- Serial / Parallel / Game
- 1.2 MB Floppy Drive
- 80287 Socket
- 200 W Power Supply
- 20 MB Hard Disk
- 23 lbs.
- Size 15 3/4" X 9 1/2" X 8"

LCD-386-16 ___ $2795

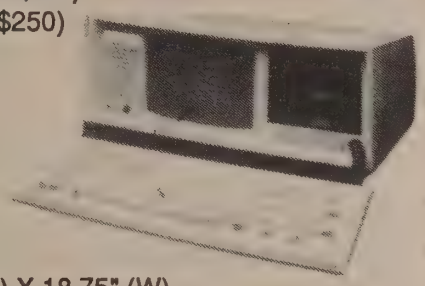
- 80386-16
- One 1.2 MB Floppy Drive
- 40 MB Hard Disk (ST-251)
- LCD Screen (640X200)
- Key Board (86 Keys)
- I/O Serial / Parallel / Game
- 80387 Socket
- 200 W Power Supply

LCD-386-20 ___ $3095

- 80386-20

CRT-PORTABLE-286 ____ $1389

- Compaq Type
- 10 MHz 80286
- 12 MHz SI = 13.3 (Option $50.)
- 16 MHz SI = 18 (Option $250)
- One 1.2 MB Floppy Drive
- 200 W Power Supply
- TTL Display 9" Amber
- AT Key Board
- Serial / Parallel / Game
- WA2 HD & FD Controller
- 20 MB Hard Disk
- Size: 16.75" (D) X 7.5" (H) X 18.75" (W)



CRT-386-16 ___ $2595

- 80386-16
- 40 MB HD

CRT-386-20 ___ $2895

- 80386-20
- 40 MB HD

GAS PLASMA 286-12 ___ $2575

- 80286-12 CPU
- SI = 15.3
- 1.2 MB Floppy Drive
- 20 MB HD ST-125
- Gas Plasma Screen (640 X 400)
- I/O Card Parallel/Serial
- 1 MB 0 Wait
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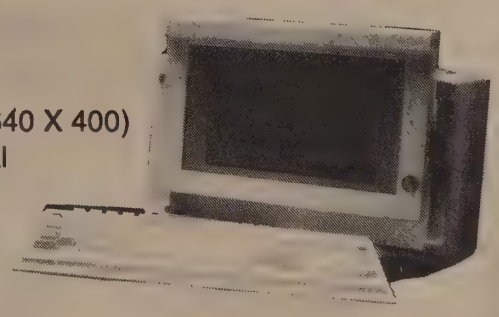
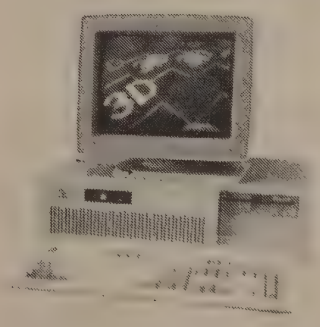


GAS PLASMA 286-16 ___ $2975

- 80286-16 CPU
- SI = 18

PCI-386
DESK TOP (T Case Available)



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MicroTimes 100

services and CFO of the company, combines business skills with a strong interest in the microcomputer software industry, assuring Computer Associates of increasing prominence in a variety of business environments.

Albert Wong, Safi Qureshey, Thomas Yuen, *Founders*

AST Research

In a remarkably short period of time, AST's founders have achieved a remarkable diversification and repositioning of their company. Once known chiefly for its enhancement boards, the company is now also a leading vendor of PC clones, laser printers and other tools for the business environment. As we were going to press, the 39-year-old Wong announced his resignation from AST to pursue other interests, but retains his seat on the board of directors and substantial stock in the company.

John Roach, *President, CEO, Chairman of the Board*

Tandy Corporation

Further entrenching itself as a respected supplier of serious business machines, Tandy announced a variety of strategic developments this year in several areas of the microcomputer marketplace. It announced both PS/2 clones and its support for the non-Micro Channel EISA standard. It created a considerable stir by being the first to announce development of a read-write optical disk (though a ship date is not expected until at least next year). And, not forgetting its hobbyist roots, it offered its DeskMate operating environment, which unlike *Windows* does not require large amounts of power and memory, as a standard interface for PC applications. Targeted at the home and small business market, DeskMate was enthusiastically adopted by a large number of vendors and will undoubtedly contribute significantly to increased sales of low-cost PCs and the software they run.

Heidi Roizen, *President*

T/Maker Company

President, **Software Publishers' Association**

As publishers of *WriteNow*, the NeXT workstation's built-in word processor, T/Maker received a fair amount of attention for its future contributions to the industry. For the rest of the year, though, it was business as usual, as Roizen, partner Royal Farros, and their small, dedicated company continued to set an example to the industry with excellent products and support and a clear sense of their own direction. As this year's SPA president, Roizen also worked to promote uniform standards and other policies designed to facilitate and streamline the development and marketing of quality software products.

Ben Rosen, *Venture Capitalist*

Sevin Rosen Management

Instrumental in the Borland/Ansa merger of last year, Rosen continues to be profoundly influential, bringing an extensive repertoire of practical business experience to bear as the company weathers the hazards of growth and transition and works to meet the requirements of a new and diverse customer base.

Edwin Rutsch, *Author*

With his series of clone buyer's guides (XT, AT and 386), Rutsch provides sound, lucid advice to the confused shopper and a valuable resource to the bewildered user. His books (themselves a testimonial to desktop publishing) make a great contribution to the industry by making it vastly easier to make informed buying decisions, as well as to be productive with your machine after you've bought it.

Keith E. Schaefer, *Vice President and General Manager, Computer Products Division*

NEC Home Electronics (USA) Inc.

For several years Schaefer has led the Computer Products division, which includes monitors and other peripherals as well as the best-selling MultiSpeed laptop computers. He's maintained high standards of product quality and customer satisfaction as the parent company in Japan continues to supply innovative technology from CD-ROM drives to superior display monitors.

John Sculley, *Chairman and CEO*

Apple Computer

Apple enjoyed phenomenal success this year, with heavy demand for its Macintosh product line and a resurgence of interest in the deathless Apple II. Sculley's vision of "one person, one computer, connected to the world" became increasingly real as Apple announced many alliances with and investments in strategically important companies. Meanwhile, Sculley's agreement with Bill Atkinson to give *HyperCard* away with all Macintoshes was rewarded with a cornucopia of applications and maniacal user devotion. True, there were a few snakes in the garden: the announcement of Apple's whopping price increases at year's end weren't received at all happily, a seemingly endless process of growth and restructuring often left Apple employees dazed and confused, and the vaunted A/UX is still balking at running Macintosh applications. But even in the year of the unstoppable Mac nothing's perfect.

Trends and Patterns

The composition of this year's list of luminaries reflects some interesting trends and common denominators.

For instance, there's a dramatic upswing in commerce and cultural exchange with the **Soviet Union.** IDG set up a publishing venture, Dave Hughes set up a telecomm link and Sphere brought *Tetris* to US audiences.

The fight against **viruses** was a significant issue for users and vendors alike this year; Don Brown and Mike Odawa worked on the defenses, and Marc Canter achieved unintended notoriety for inadvertently spreading the Peace Message around Aldus.

Xerox PARC technology continues to have significant impact, and it's usually somebody other than Xerox who's reaping the rewards. Interface technology for Macintosh, Metaphor and NeXT all come from PARC, to say nothing of Adobe's PostScript. On the other hand, in the case of *Ventura Publisher,* Digital Research's loss was Xerox's gain.

Not surprisingly, considering the advent of powerful 32-bit microcomputers, **UNIX** vendors are much in evidence. Twelve of the industry leaders on this year's list are involved with the development and marketing of UNIX hardware and software.

Likewise, as **connectivity** becomes an increasingly significant issue, multivendor environments are becoming more common. Twenty-six of the hardware and software companies on this year's list offer products for a variety of platforms and machine types.

Stan Shih, *Chairman, CEO, President*

Acer

According to its annual report, Acer's chairman compares his business strategy to the ancient game of GO. "Long-term strategic moves and territory gains are objectives of GO. Applying similar principles to business, he goes one step further to aim for stable, long-term growth." As head of Acer (formerly Multitech, Taiwan's leading clone vendor), Shih has made a variety of strategic decisions and acquisitions to create a large, diversified company, a current leader in the PC clone marketplace which is now expanding its operations into the UNIX, PS/2 and networking arenas.

Roger Sippl, *CEO*

Informix Software

A/UX might be in much better shape today if Steve Jobs had had fewer sartorial prejudices back in the '70s. Programming wizard Roger Sippl, newly graduated, went for an interview at Apple, but his unfortunate decision to wear a suit to the interview caused Jobs to think he must not be a real programmer. So Sippl went on to Cromemco and later went on to found Informix (originally Relational Database Systems) in 1980. Since then the company's grown to a prominent position in the world of relational databases, offering versatile, high-performance software products in environments from mainframes to supermicros. As UNIX becomes increasingly significant in the micro world, Informix is becoming a significant presence in micro-based environments, notably with an announce-

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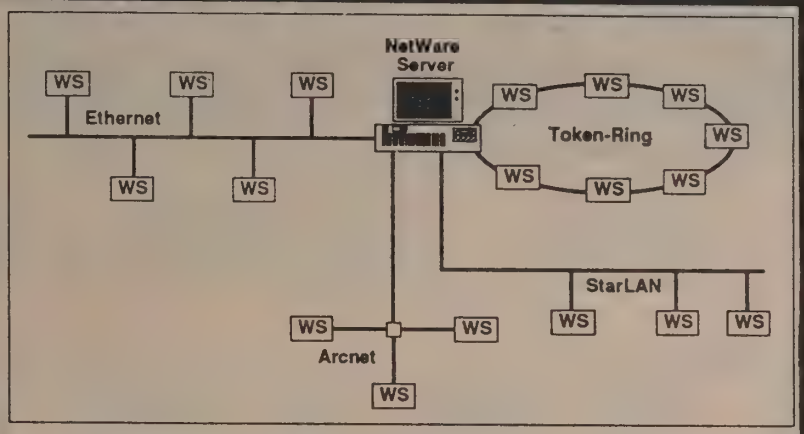

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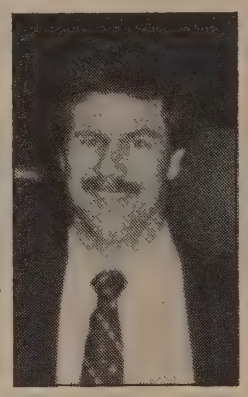
MicroTimes 100

ment of A/UX versions of its products. In a further move into the Macintosh market, Informix also acquired the revolutionary new spreadsheet *Wingz* and its parent company.

Wayne Smith, *Southern California District Sales Manager*

Atari



It's been a somewhat lackluster year from Atari, with not much in the way of product announcements and not much in the way of shipping many of the products announced last year. But if the company as a whole was in the doldrums, its Southern California sales were booming as Smith succeeded in positioning Atari machines as the musician's computer of choice. Working closely with dealers, Smith used an extensive advertising campaign in professional music magazines and a highly successful seminar on "Introduction to MIDI" to acquaint potential users with the power, flexibility and ease of use offered by Atari computers. One of Smith's most telling points: "Perhaps the nicest thing about an Atari is how little it costs. With what you save on an Atari you can buy yourself a synthesizer and some software."

Max Toy, *President*

Commodore Business Machines

With characteristic common-sense approaches to problem-solving, marketing and customer responsiveness, Toy has made remarkable progress in turning the long-floundering Commodore around in his first year as president. Thanks to shrewd moves like bundling the GEOS operating system with disk drives, thereby vastly enhancing the utility of the 8-bit C64 and 128 machines, and an aggressive trade-in-for-Amigas campaign, sales are booming and the Amiga is enjoying unprecedented prestige and popularity.

Rene Vishney, *President*

Award Software

As a leading supplier of BIOS and system software for PS/2, 386, 286 and XT-based systems, which it supplies to OEMs and hardware vendors, Award has a significant impact on the evolution of standards and the development of effective business systems.

John Walker

Autodesk

Among Walker's various noteworthy achievements this year, two stand out. In a move that was startling but probably a very good thing for Autodesk's future product line, Walker resigned the chairmanship of the company he co-founded because he wanted to go back to developing new products. Also, he was instrumental in bringing about the acquisition by Autodesk of Ted Nelson's Xanadu hypertext project; when astonished observers commented on the sheer incongruity of the relatively staid CAD company's sudden interest in what was widely considered the longest-running crackpot vaporware project since the Do-What-I-Mean machine, Walker mildly pointed out that, after all, when Autodesk set out to do CAD on a PC, that, too, was considered crackpot vaporware. We await the results of this alliance with interest.

Bob Wallace, *President and Owner*

Quicksoft

Wallace and his intrepid programmers continue to work diligently to make *PC-Write*, the shareware word processor of choice, better and more powerful. They serve as a shining example of excellent product and excellent customer support.

Ken Wasch, *Executive Director*

Software Publishers' Association

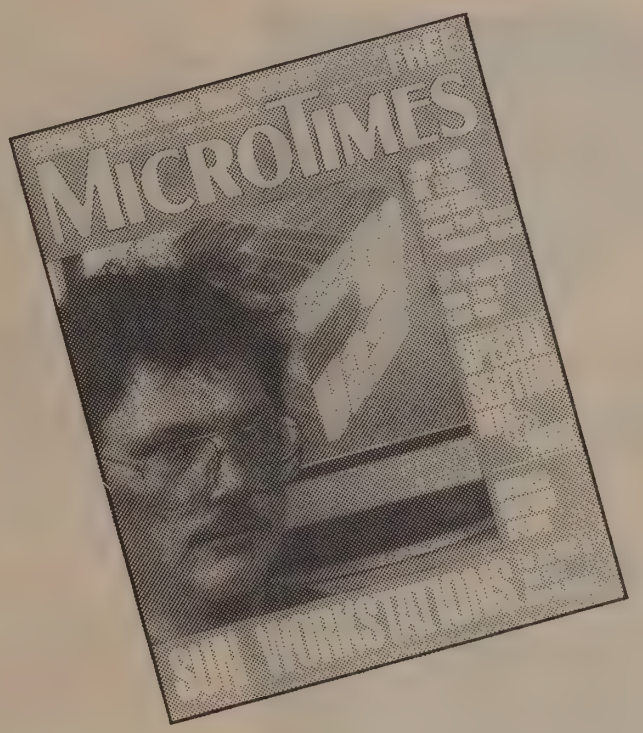
Under the leadership of founder Wasch, the SPA was active this year in addressing the problems and helping the efforts of its members, as well as increasing general awareness and appreciation of the industry. In addition to educational and promotional efforts such as Computer Learning Month and the annual SPA Awards, the SPA this year scored a significant victory against software piracy in court cases involving dealers who illegally provided copies of applications with hard disks. □

No Other Magazines Were Mentioned!

That's right! In a recent survey, the Copley Newspaper Group asked computer retailers in Los Angeles, "What Magazines Were Most Popular With Their Customers?"

Here are the results:

1. PC Magazine
2. Byte
3. **MicroTimes**
4. MacUser
5. MacWorld
6. Lotus
7. Infoworld
8. Newsweek
9. Time



That's it. No other magazines were mentioned. Computer hardware and software retailers in California agree—there's only one local magazine their customers depend on. MicroTimes.

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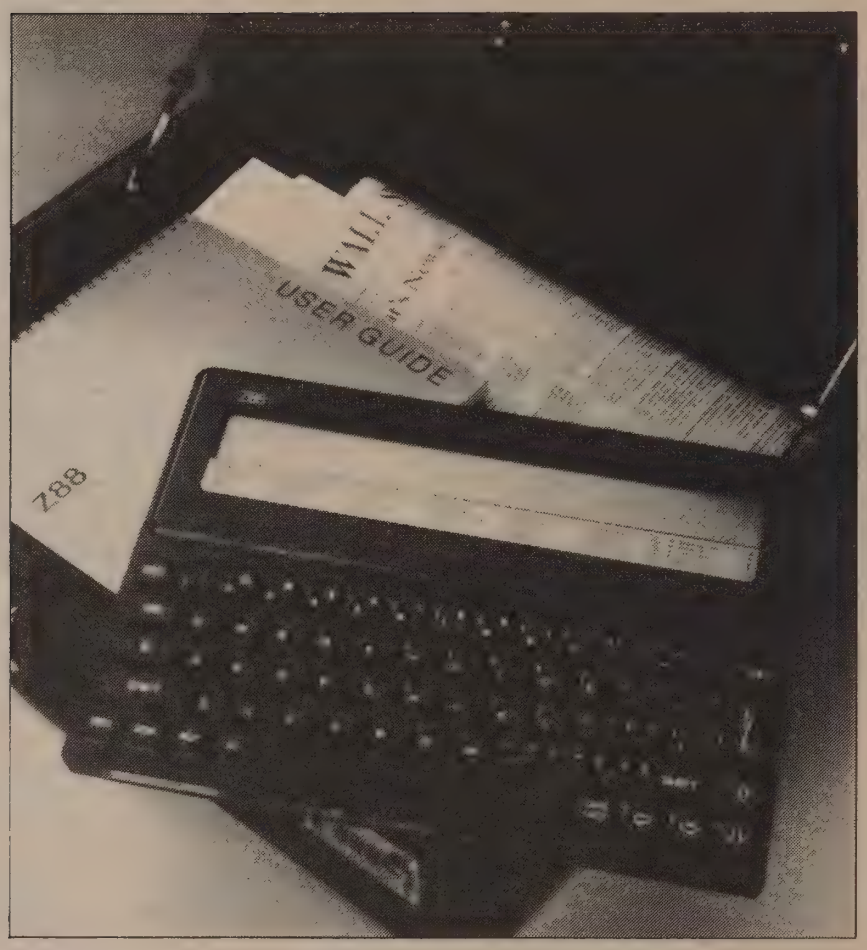
Z88 Laptop

The Business Traveler's Dream

By Matthew Leeds



Laptop users are a new breed. They can be recognized by several characteristics: one arm is longer than the other, the tops of their thighs have permanent flat spots and one shoulder is lower than the other. These and other symptoms are the result of carrying and using laptop computers that weigh in excess of 10 pounds.

That 10-pound weight is just for the computer. By the time you add disks, extra batteries and/or battery chargers, manuals, carrying case and other necessary accessories, you've got a chiropractor's delight.

I suppose that if you are trying to duplicate the full power of your deskbound PC in a portable, lugging the weight and bulk of a six-month-old infant with you makes sense. However, I don't need a hard disk or a full-screen display on the road. I use a laptop for text entry, keeping track of my appointments, maintaining a Rolodex of contacts and keeping track of my expenses while on the road. The smaller and lighter the machine, the better.

That's a long lead into a product review, but I wanted to lay out the groundwork for what's to come. How about an under-two-pound laptop that runs for 20 hours on four AA batteries and has a full keyboard, all the software you'll need in ROM on-board, expansion capability of 3Mb, and a supertwist LCD display? The entire package is the size of a notebook and less than an inch thick.

The Z88

The on-board software includes a word processor, database, spreadsheet, diary/appointment manager, clock with alarm, calendar, calculator, terminal program and BASIC. Each application is interactive with the others, and you can run any application via hotkeys while in any other application.

The LCD display is an 8-line by 80-column layout, with an extra section to the right used for status displays or a thumbnail view of a full page while in the word processor. The display is very readable, although the characters are a little small for my taste. A contrast wheel does let you adjust the display for your particular lighting conditions. The display is an integral part of the surface of the Z88, and there is no provision for tilting just the display. There is a swingout backrest that can be used to prop up the entire unit at an angle.

The keyboard is a little odd. The size of the keycaps is more than adequate, but there is virtually no tactile feedback. You can toggle on a discreet beep if you desire. The entire keyboard is rubber coated. This protects against spilled drinks and the like, but the rubber coating tends to collect dust and lint. This does not affect the functioning of the machine, and is easily cleaned.

The software included is remarkable. The entire operating system, all of the applications software, and

How about an under-two-pound laptop that runs for 20 hours on four AA batteries and has a full keyboard, all the software you'll need in ROM, expansion capability for 3Mb of RAM, and a supertwist LCD display? The entire package is the size of a notebook and less than an inch thick.

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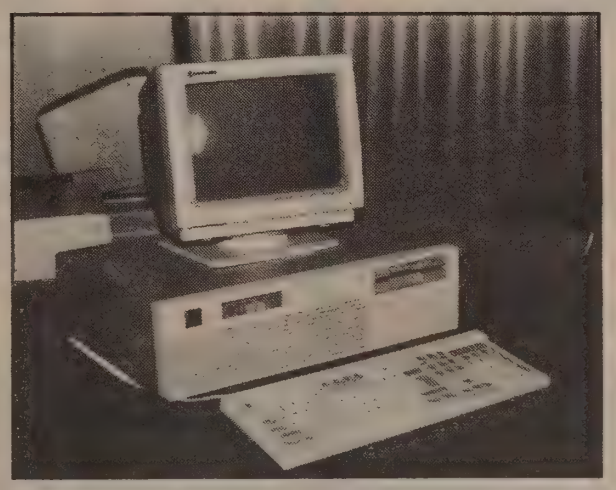

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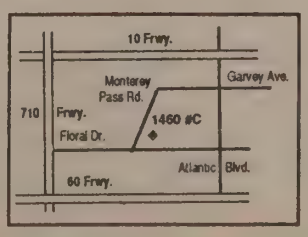

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BASIC are contained in 128K of ROM. Each application has a pop-up menu or set of menus that list all of the functions and their keyboard equivalents. You can use the cursor keys to select a menu function or just use the keyboard. Some of the applications also have a series of help screens accessed by pressing the help key. Additional help will be available in a ROM pack (see below).

The word processor, spreadsheet and database are a single integrated application called *Pipedream*. Ported to a traditional PC, this application would compete well with existing products. The word processor offers every feature you would expect or need in a laptop short of a spelling checker or thesaurus: block moves, formatting, headers and footers, soft styles such as bold or underlining, super and subscripts, search and replace, and the journalist's favorite—word count.

The Z88 makes the most of a set of batteries. It will run for up to 20 hours on a set of four AA's. It does not use a disk drive, instead storing data on either CMOS RAM packs or by burning EPROM packs. RAM packs do not contain battery backup, but draw their power from the Z88. An onboard capacitor stores sufficient power to allow battery changes without loss of stored data.

The Z88 comes with 32K of RAM and three slots for RAM/ROM/EPROM packs. RAM and EPROM packs in 32K, 128K and 512K are available, and 1Mb packs should be available soon. Additional applications software will be distributed on ROM packs.

There is a serial port for connection to either a printer or data transfer to another PC. The port uses a DB9 connector, but cables for either RS-232 or parallel connection are available. I used a serial cable to move files back and forth to my Amiga with no difficulty.

In many ways the Z88 is my laptop Amiga. Although it lacks color and graphics, its ability to let me switch from application to application at will fits nicely with the work style I've developed using a multi-tasking machine. The Z88 doesn't multi-task, but it switches from application to application quickly enough that I don't mind.

A few other observations are in order. The filing system on the Z88 supports sub-directories, creation dates, wild card searches, batch files and redirection of screen output to printer or file. There is a built-in printer driver editor program that lets you build your own driver for any printer (sorry, no support for PostScript yet). The alarm can be set to execute a program or batch file or just display a message. You can cut and paste from any application to any other easily and quickly.

If you get the feeling that I am enthusiastic about the Z88, you're right. It's not perfect, but it is far and away better for my purposes than any other laptop I've seen.

The BASIC included with the Z88 is a version of BBC BASIC. This includes some limited machine code calls and assembler capabilities. Given some developer support (and I expect hackers will love this machine) I'd expect to see third-party products arriving soon.

Conclusions

If you get the feeling that I am enthusiastic about the Z88, you're right. It's not perfect, but it is far and away better for my purposes than any other laptop I've seen. I never have to think about whether I want to carry it with me, never have to worry about its batteries running out of juice, or about it being too obtrusive should I use it for notetaking in a conference or class.

A basic system would include the Z88 and a 128K RAM pack. At list price this would run $659.00. A serial cable would add $22.00. That's it. No money for software, it's included. No other accessories required. Perfect for journalists, sales people, students, or anyone who needed a second, portable computer. (Z88 Laptop Computer, SSI Computer Systems, 424 Cumberland Avenue, Portland, Maine 04101, (207) 761-3700. List Price — $549.00.)

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MAC @ WORK

Illustrator 88:

The Features War Continues

By Roger Karraker and Robert Madrid

A popular year-end sport for writers is to attempt to find deep meaning and significance, some historical turning point, in a 12-month span that is otherwise best remembered for the relentless onslaught of the Four Horsemen of the Apocalypse: plague, famine, pestilence and war.

The computer equivalent of the Four Horsemen must be Obsolescence, Price Increases, Viruses and Hype. The year 1988 had plenty of each. But amidst the pain, suffering and angst, one group of computer users—graphic designers—smiled their way through the year, for they had been blessed with Good Software.

One caveat here: we are speaking of professional design work, which means we are talking Macintosh. Want some proof? When *Publish!* magazine gave awards for desktop publishing design this summer, six of the seven went to work produced on the Macintosh. When the Society of Newspaper Design polled its members, Macs were preferred 6-1.

It is somewhat shocking, at year-end 1988, to look back and see the tools graphic designers were using just one year ago. For the most part, they were restricted to the Mac's tiny black-and-white screen and 68000 processor, a 1984 screamer that was, in 1987, downright sedate. Full-page graphics meant tedious scrolling or the addition of an external

Illustrator 88 offers a host of useful tools, from auto-trace to sophisticated color handling, but also has some surprising shortcomings.

monitor that cost as much as the computer itself.

Software? Black-and-white to match the monitor: granddaddy *MacDraw*, *FullPaint*, *SuperPaint* and the year's top entry, Adobe *Illustrator*, which promised to harness the powerful PostScript page description language. Introduced in March, 1987, *Illustrator* had by year-end become the state-of-the art design program.

When Apple CEO John Sculley introduced the Mac SE and Mac II in March 1987, he told the audience that the top-end Macintosh, the Plus, had suddenly become the bottom-end machine. Nine months later, the same was true on the software side. *MacDraw*, *Super Paint*, *Illustrator*, all were clearly inadequate. Publishers rushed to announce new-generation software that would meet the rising expectations of designers whose appetites were whetted by the new, faster, more powerful hardware.

In the intervening 18 months graphics profes-

sionals have been staggered by new software, most of it designed for the Mac II, that for the first time brings truly professional tools to the design workstation. Well-heeled designers now can choose from video capture boards, color scanners, mini-Scitex color retouching software and other exotica. More importantly, the 1988 versions of day-to-day workhorse design programs—*MacDraw*, *Illustrator* and the Aldus newcomer *FreeHand*—are light-years ahead of their 1987 equivalents. What was truly impossible in 1987 is today commonplace.

While Aldus Corp.'s new program *FreeHand* garnered much of the publicity in 1988 (see sidebar), the big unanswered question by fall was whether Adobe could regain the top spot in designers' hearts with its new release, *Illustrator 88*. Santa Rosa designer R.B. Madrid, who has worked extensively with both *FreeHand* and *Illustrator*, got his hands on *Illustrator 88* and files this report.

Hands On: Artist's Impressions

Until *FreeHand* came along, *Illustrator* was It, in capital letters. Sure, it was a bit clunky, with all that point-and-click tracing of templates, but it was solid and got the job done. Then *FreeHand*, with its vastly superior tools and intuitive ease of use, set new standards. Can *Illustrator 88* keep up?

• Auto-trace is great. You import a bit-mapped object and merely click on one of the objects. *Illustrator* will trace the object automatically and create the Bezier curves. *Digital Darkroom* has auto-trace, too. *SuperPaint* 2.0 is supposed to have it when it comes out. Aldus says *FreeHand* 2.0 will have it. Already designers consider it a requirement. Soon auto-trace will be in every graphics program (if they're smart). Right now the auto trace tools are crude, but they will get better!

• You can't move an ungrouped line or object. First you have to group, click off, then move—very tedious.

• You can't size an object after it is drawn. Where *FreeHand* gives you a box around a grouped object so you can size it, *Illustrator* just groups the points where they are—sort of a freeze or lock—and is quite slow to move this grouped object from place to place. The solution *Illustrator* has provided is the so-called sizing tool that Carl Sagan must have invented: it's almost impossible to scale proportionally and do it quickly.

• I was a bit surprised at the relative ease at making a color library. The lack of a slider to control the color being selected is disheartening. Because you have to touch the keyboard so much, it seems to me that *Illustrator* should have gone one way or the other; mostly mouse or mostly keyboard. Being an artist, I vote for the mouse. I would like to see a tear-off menu for color selection; someday it will be a must. Both *FreeHand* and *Illustrator* have moveable color libraries that can be accessed by other files.

•Speaking of color libraries, *Illustrator 88* has Pantone colors built in. Designers who use spot colors often specify Pantone colors; they are a standard for designers and printers. *Illustrator* has licensed the Pantone set; you need only click on a color and *whoosh*, there it is. Aldus says *FreeHand* 2.0 will have Pantone colors, and *Laser Paint II* has them as well. This is a perfect example of an exclusive feature suddenly becoming standard and expected.

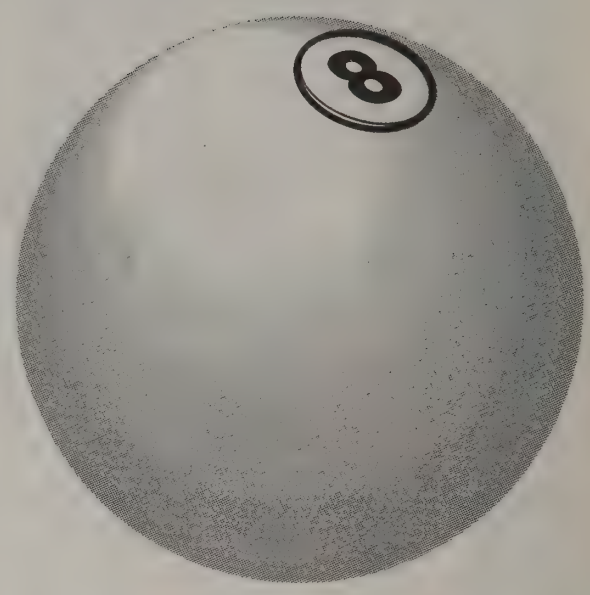
• *Illustrator 88* comes with two good utilities. Separator analyzes the artwork and generates the four color separations that the printer needs to make printing plates. DrawOver allows you to import *MacDraw* documents (PICT format) and automatically convert them to *Illustrator 88* (encapsulated PostScript) format. Combined with auto-trace, it gives *Illustrator 88* powerful capabilities to keep your object-oriented art up-to-date.

• *FreeHand* has a few more tools that are helpful—like the line tools—where *Illustrator* chose to omit them. Instead there is a measurement tool that to me is of virtually no use. This is supposed to be a graphic designer's application! On the other hand *Illustrator* has option keys that make up for some of the shortcomings. Holding down the Option key and clicking the scale tool gives you a dialogue box where you can uniformly size or size at different percentages.

• One of the biggest shortcomings is the lack of convenience with the quick keys. Like most designers I'm right-handed. I work fastest if I can keep my right hand on the mouse and do all the keyboard commands with my left land. *FreeHand* does this: Command-E enlarges and Command-R reduces—and they are mnemonic. But with *Illustrator* I must use Command-H and Command-M, requiring that I either use two hands or make a long, awkward stretch with my left hand—and my hands aren't small.

• Just about all the *Illustrator* tools feel clumsy: you can't just sit down right away and start using them. The freehand tool creates a wimpy scriggle of a line and is hard to follow unless your nose is pressed up to the screen. Also the line segments that this tool creates when the calculations are done are sort of simple. I mean that most of the time *Illustrator* doesn't give you enough points to work with. (neither does *FreeHand*) and you have to add more points manually. I would like to see a dialogue box with a "hot" or quick key, so that the user can choose how many points he wants on a line or object. This could be particularly helpful for circles and ovals that you want to pare down: instead of the routine four points it gives you, make it 16 points, or eight or ten.

• Type is no better than it was in *Illustrator* 1.1! Type handling has always been awkward in *Illustrator*. You can change the stroke and fill easily, even fill the type with a custom pattern, but *FreeHand* allows more interaction on kerning and spacing.



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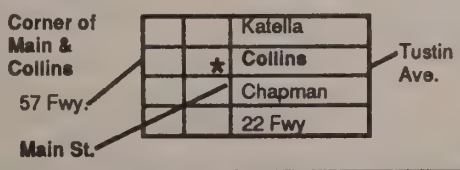


• Probably the best feature I found in *Illustrator 88* is the blend tool, the first one of its kind for the Mac that I have seen—and it's terrific, especially for making a smooth transition from color to color. Sure, this will change a pencil into an alligator in as many steps as you want, but the benefit of this tool is more for the shading and tinting effect you can master with a little work. *FreeHand* is way behind in this area; the ability to make irregular fills is a true gift to the artist.

• The drawback is that *Illustrator* only gives you a portion of what you need. Okay, great, we have the blend tool: now where are the graduated, radial and PostScript fills other programs have? You might say that *Illustrator*'s blend tool will do all those things. But you need three days to do what *FreeHand*'s graduated fills and the like do in a blink of the eye.

• Another drawback is in the field of clipping and pasting inside another object. This may not seem like a lot but it is a very nice convenience to have a program that can do this quickly (*FreeHand* does). *Illustrator* has masking, but it's pretty lame.

• *Illustrator* also missed the boat on the layering that *FreeHand* lets you do. *Illustrator* lets you stack or paste on top, but the capability is pretty elementary next to *FreeHand*, which allows 200 layers. *Illustrator* has a "hide" command that locks an object or line in a particular place, then takes it from the screen so you can work in that general area without selecting the points of another object. However, you can't see the hidden object, so alignment is impossible in this mode.

• You can't work in the preview mode! You can work, or see it in color, but you can't do both. In *FreeHand* you can, and it is an enormous time-saver. Even on a 5-megabyte Mac II, *Illustrator* takes forever to draw the screen; in color it's really impossible.

• There is no menu command to align to a grid or to align objects. This is a real nail in the coffin.

• *Illustrator* is a producer. You can count on *Illustrator* printing or accepting an array of differently formatted files with ease, where *FreeHand* falls very short, especially around printing. *Illustrator* is steady; if another program fails to do what you need, *Illustrator* is there.

I seem pretty harsh on *Illustrator 88*, but I just expected a lot more from Adobe after *FreeHand* came out. *Illustrator 88* is an excellent program to have; if you have the money buy both it and *FreeHand*. But unless you are wealthy, this is how I would make a decision: If you have *Illustrator* 1.1, stay with *Illustrator 88*; the upgrade is cheap, and since you already know the keystrokes and are accustomed to the way *Illustrator* handles, it's a very nice package. But if you're willing to take a little time to learn a new program, or you don't have *Illustrator* already, go for *FreeHand* in a heartbeat. *FreeHand* is just easier to learn because of its interface. And there's the promise of the new features in *FreeHand* 2.0. Which means that *Illustrator 89* can't be far away. □

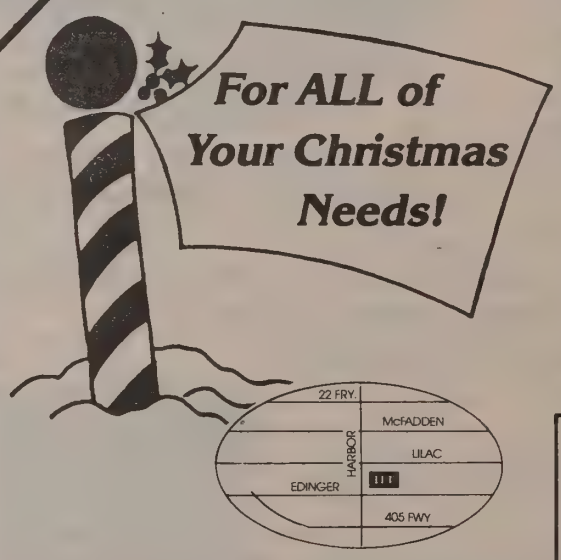
Battle Bulletins from the Designer Software Front

Apple Expo, March 1987: Apple announces color Mac II. Deliveries are slow until fourth quarter.

Macworld Expo, January 1988: Aldus Corp., publisher of industry leader *PageMaker*, strikes first, showing *FreeHand*, a new object-oriented drawing program that features 200 drawing layers and color libraries and will automatically print spot color separations. The program is fast, allows users to modify the art while viewing it in full color and offers a first: a freehand drawing tool. The artist merely draws freehand on screen; the program automatically turns the line into a series of Bezier curves that can be edited individually. Best of all, the program ships in March (see *MicroTimes*, August 1988). *FreeHand* is suddenly the state-of-the-art program, but as designers push it to its limits they encounter inexplicable failures to print, failures that Aldus cannot explain or cure.

July 1988: A market research firm convenes a "focus group" of designers and illustrators to discuss new software. The group ranks *FreeHand* with 8.5-9 out of a possible 10. *Illustrator* 1.1 is rated at 7.0-7.5. Only three of the group have used the just-released *Illustrator 88*. The group sees a new software package for designers, one that adds exciting new features—but leaves out some important ones.

October 1988: Just as this review of *Illustrator 88* was going to press, Aldus Corp. announces *FreeHand* 2.0, a new version with, as expected, many new features. Watch for a review in *MicroTimes* soon.



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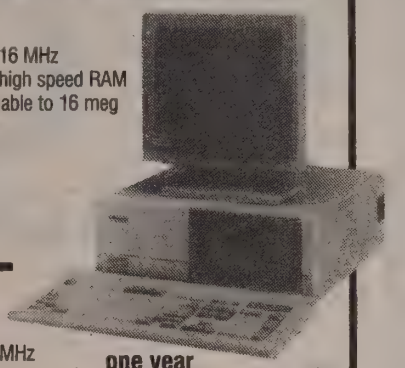

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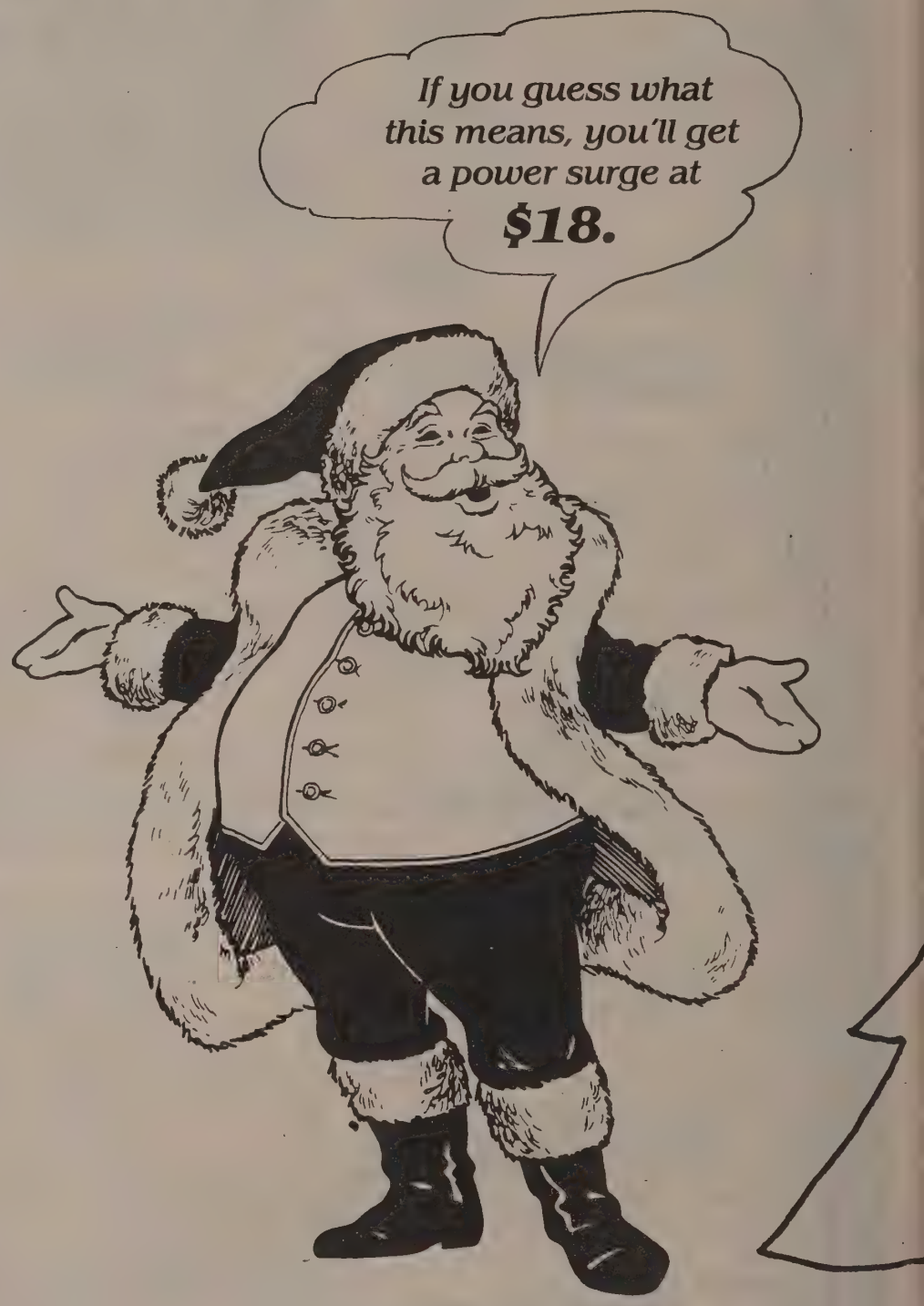

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BY MATTHEW LEEDS

Holiday Ideas For Your Amiga Friends

The end of the year is rapidly approaching and with it come holidays with a tradition of gift giving. Which means that it's time for me to write about what to get for an Amiga owner. A computer without software, after all, is like a toaster without bread. And so it's time for the annual spend-it-all follies.

For The One Who Has Everything...

Looking for that special gift for the person who has everything? Want to make sure that your special Amiga friend is the envy of the neighborhood?

Get them a 68030 board with lots of 32 bit memory. This high-priced combination is the equivalent of a four barrel carburetor and 4:11 rear end. Your friend will be able to watch 3D animations render in days instead of months, and recalculate spreadsheets in the blink of an eye. You, of course, will be contributing to the national debt, but that's another column. Recommended is the Hurricane board from Finally Technologies.

For The Budget-Minded

On a more affordable level, the basic gifts to look for are the essential software items: a good paint program, word processor, disk utility, subscription to an Amiga-specific magazine and a copy of the official release of AmigaDOS 1.3.

The leader in paint programs is still *Deluxe Paint II*. It has its limits (no support for EHB or HAM, dumb file requesters and font requesters) but it is the workhorse of paint programs for all Amiga users. It is the easiest to learn, offers the best balance between number of features and ease of use, and just might one day be upgraded again. Alternative choices include *Digi-Paint*, an excellent HAM paint program; *Express Paint* 2.0, a little harder to use than *Deluxe Paint* but with some impressive new features; and *Deluxe PhotoLab*, a newcomer with some image processing capabilities and an excellent poster printing module.

As to word processors, it's a tough category to pick a winner in. I personally prefer a non-graphics based word processor, as I rarely need to submit hard copy and I don't like the performance penalty imposed by graphics-based programs. I still use *Scribble!* for much of my work—I like its speed and multiple windows, and I've just gotten used to using it. When I need a more powerful program I switch over to *WordPerfect*. It requires a hard disk for tolerable performance, but it offers some impressive extras.

If you are interested in a graphics-based word processor (these offer multiple fonts, graphics and some color), I would recommend either *ProWrite* or *excellence! ProWrite* is more affordable, runs a little faster on-screen and is easy to learn. *excellence!* is expensive but offers considerably more power. It too runs best in a hard disk environment and prefers lots of expansion memory.

Shuffling files around from Workbench or CLI sometimes becomes awkward. Some files don't have .info files attached to them, making them invisible in a Workbench environment. Finding out how much space a set of files will take up or remembering the correct set of DOS commands to create a subdirectory and fill it with the right files can be too much sometimes at 3 A.M. That's when a good disk utility can come in handy. There are quite a few good ones in the public domain, but somehow they wouldn't seem appropriate as a gift. And none of them seem to have all of the features found in *DiskMaster* from PP&S. This is the disk utility I use every day. It even plays digitized sound samples.

There are a lot of magazines available for Amiga owners. To decide which one would be best for a friend, you'll need to decide where their interests lie. If they want general information on new products for the Amiga, *AmigaWorld* would be a good choice. If they want more in-depth looks at using the Amiga and programming, then *AmigaTimes* might be a good choice.

For pure product reviews on the newest products *Amiga Sentry* seems to have the best coverage. Don't overlook the disk-based magazines; both *Jumpdisk* and *AMNEWS* offer a good mix of coverage.

The latest release of AmigaDOS has finally hit the street. Long overdue, but well worth the wait, 1.3 adds lots of new features and some powerful new commands. The official release package includes an excellent manual.

If you should, for some reason, decide not to get it, I would still recommend a book that can guide your friend through the intricacy of AmigaDOS. *The Amiga Companion*, by Rob Peck, is the first book out that includes AmigaDOS 1.3. It offers both general information about the Amiga, and specifics on using the commands. Although it has a few missing pieces of information, it is a good general guide to using the Amiga.

The basic gifts to look for are the essential software items: a good paint program, word processor, disk utility, subscription to an Amiga-specific magazine, and a copy of the official release of AmigaDOS 1.3.

If your friend does not have a hard disk, I would recommend *FACC II*, the floppy accelerator. This is a floppy cache program that stores the most recently used information from a floppy drive in memory. The next time that information is requested (i.e., calling a directory) it comes from RAM instead of off the disk. Although it works best with expansion RAM, the size of the cache can be specified to allow it to work on an unexpanded Amiga.

If you've recently won the lottery, some good $500 to $800 dollar choices include expansion RAM, a hard disk system, FlickerFixer (for A2000 owners), genlock/encoder and a good chair to sit in while using the computer. The chair might come in at a little less.

For video fans, *Videoscape* and *Sculpt-Animate* offer real 3D rendering and animation. They both require dedication to learn and patience during rendering. For special effects and titling I like *Video Effects 3D*, easy to learn but full of possibilities. A good image processing program such as *Butcher* or *Pixmate* would also come in handy.

Finally, don't forget games. I'm not a great fan of computer games, mostly because I sit in front of one too many hours each day as it is, but there are a few well worth the time. *Interceptor* is an excellent flight simulator, fast, noisy and full of flash. *Shanghai* is a solitare based on mah-jongg, addictive and absorbing. For those who haven't seen it yet, *Marble Madness* is still enjoyable. *Balance of Power* still rates as the strategy game for geopoliticos, offering real depth but requiring a real time commitment to play. □

Matthew Leeds has been involved in the high tech field since he blew up his bedroom playing with a children's chemistry kit. He has been using Commodore computers since 1982 and has a strong interest in photography, video, graphics and related fields.

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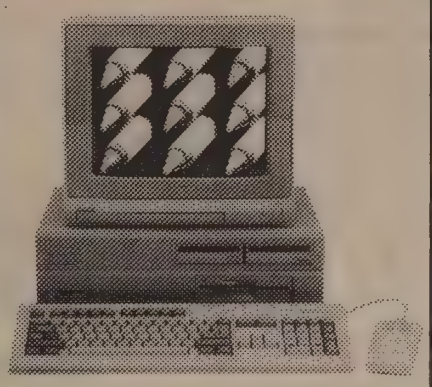

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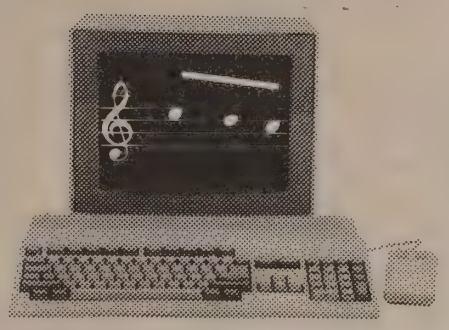

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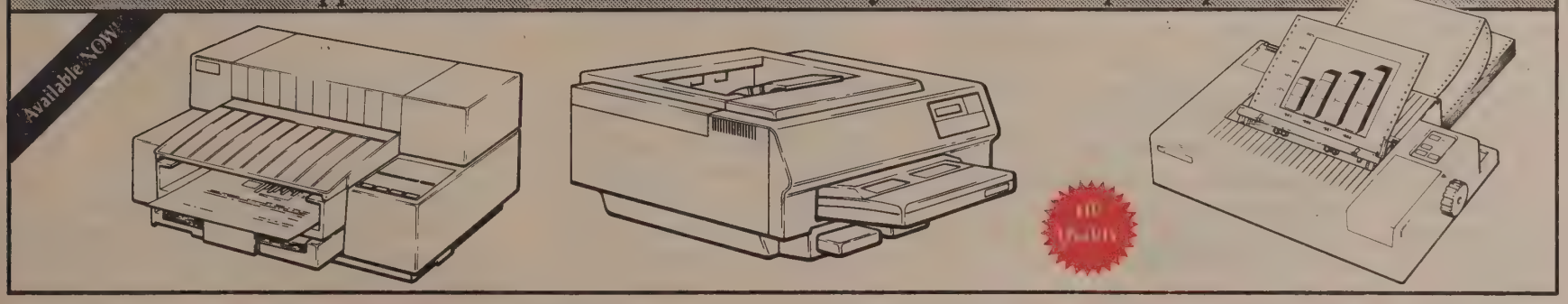

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BY DAVID HAWKINS

Catching Up—

A Collection Of Announcements

Each month I intend to cover a lot of little announcements that have been accumulating around here. We'll see how well I do this time. First, I hope you have a Happy Holiday season. Maybe that means I should start with the good news...

MINIX Released

Many of the larger systems used in the computer field use an operating system called UNIX(tm), which was developed at Bell Labs in the early 1970s. UNIX is very powerful, but also expensive. I mean, who wants to spend over $10,000 to run UNIX on a computer that costs under $1000? (Well, *I* would if I had that kind of money, but I'm a nut, right?)

Well, now you can get a version of UNIX for under $100. Andy Tanenbaum in Holland wrote a program that looks like UNIX and called it MINIX. MINIX is being released in the U.S. by Prentice-Hall. It includes the source code along with a C compiler, which means you can modify it (if you know C). Some stores have it and some don't at the moment, so I haven't been able to get a copy yet. A full review will be along as soon as possible.

There is a book that describes MINIX, also. In the U.S. you can order the software and books from most bookstores or directly from Prentice-Hall in NJ. The ISBN number for the Atari software is 0-13-584392-8. Prentice-Hall's phone number is (201) 767-5937.

Spectre 128 Released

Dave Small's improved Macintosh emulator, Spectre 128, is now available. I still don't have a review copy (and will probably go ahead and buy one). It's $179.95 from Gadgets by Small, Inc. at 40 W. Littleton Blvd., #210-211, Littleton, Colorado 80120, and the phone number is (303) 791-6098; call between 8:30 am and 2:30 pm Mountain Time.

To use the Spectre 128 you need some Mac ROMs. If you use the old 64K Mac ROMs, you can run basically the same programs that the Magic Sac could run. If you get the 128K Mac ROMs, you can run just about everything, including *HyperCard*, Adobe *Illustrator* and *PageMaker*. There are stores advertising the 128K Mac ROMs, so evidently it's possible to get them.

Copyright © 1988 by David Hawkins. All rights reserved. David Hawkins is the host of the Atari conference on The WELL (415/332-6106); send email to dhawk. He has one of the first Atari ST 1040s sold in San Francisco goth monitors, an Okimate 20 color printer, and disks all over the room.

WordUp Upgrade

WordUp, an excellent word processing program that I covered earlier this year, has now been upgraded. *WordUp* is from Neocept, Inc., 547 Constitution, Unit A, Camarillo, CA 93010. Some of the improvements include better printer support, clearer directions in the manual and an installation program that helps set up the necessary files.

Just Advice — Not News

I've been asked a few times what people with 520 STs should do with them. There's more and more software coming out that doesn't run well —or at all— on the 520.

Unfortunately everyone I've talked to has a different idea. I like the idea of getting a shop to extend the memory to 2 or 4 Megs. Memory chips are still expensive, but that's going to affect the price of a new system also. Check with a dealer about present prices on a Mega 2 or 4 and then see which looks better.

Personally I'm plugging along on a 1040 ST, but if I win the lottery, expect to see reports on the Mega 4 here. There are rumors that Atari will be announcing some new computers at COMDEX, but this column is being written before COMDEX.

Atari User Groups

I'll admit that I've never been to a Atari Users meeting. Where are they? If you know of a regular meeting, please write me c/o *MicroTimes*. I promise to get out and visit a few meetings in the near future.

Another Telecom Program

This month's column was written in the buffer of *Interlink ST*, a telecommunications program from Intersect Software, 3951 Sawyer Rd., Suite 108, Sarasota, FL 33583. *Interlink* is a pretty good program, comparable to *Flash* in features and cost.

Interlink has a script or command feature that allows you to store a series of commands to be executed when you run that script. It also includes a feature that watches what you type in and stores it so you can run frequently-used command sequences as a script.

I prefer *Interlink*'s built-in word processor to *Flash*'s. *Interlink*'s doesn't display funny characters for carriage returns. It looks like straight text.

Basically I could live with either *Interlink* or *Flash*; both are good programs. For a new user I'd recommend *Interlink* because the manual is up to date. *Flash*'s is partly printed and partly on disk.

To use the Spectre 128 you need some Mac ROMs. If you get the 128K Mac ROMs, you can run just about everything, including HyperCard, Adobe Illustrator, and PageMaker.

Bad News

Neil Harris has left Atari as of September this year. He's now working for GEnie in Washington, DC. Normally I don't comment on what's going on inside Atari, but I will say that a lot of the people there are very dedicated and hard-working. I think it is a real loss for Atari that Neil and others have left. I've called Neil at the office at 10:30 on a Friday night to check the facts in my next column, and he was not only there but willing to carefully go over what he knew about the material.

Good luck in the new job, Neil.

Bad Product

There's another game out there to avoid: *Lords of Conquest*. The game is similar to the board game of *Risk* in that you and the opponent have all the countries on the map and each tries to get control of every country. It's like the computer game of *Empire* in that you control resources and production.

Lords of Conquest has several problems, though. First, the manual is poorly written. There are some important details of the game that are inadequately described. The graphics in the game are terrible. The logic is also hard to follow. I played the game for about six hours, never did get certain parts to work, and couldn't tell if it was poor game design or poor writing in the manual. □

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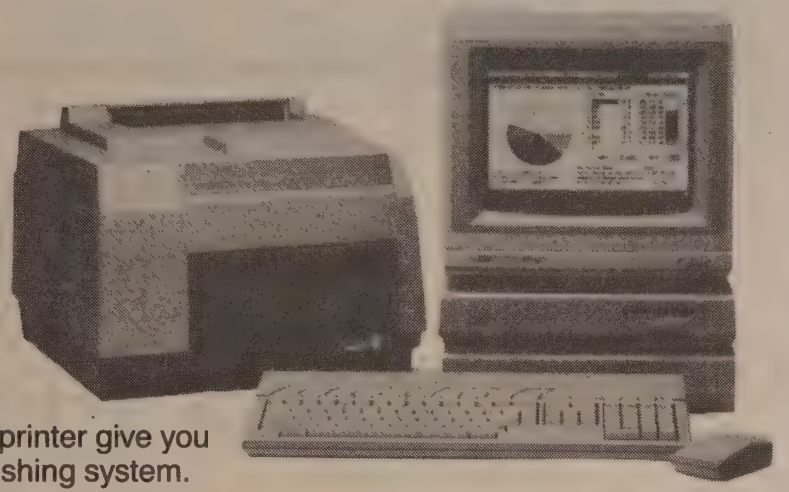

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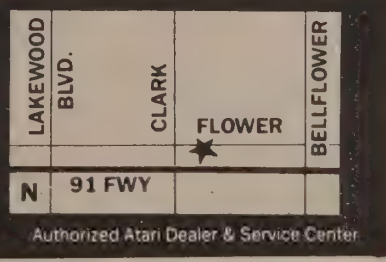

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BY BENNETT FALK

Live Free Or Die

A Short History Of The Internet Virus

As this is written, the great Internet Virus episode is one week old, and the well-known facts of the case are gradually being upstaged by their consequences.

On or about November 2, 1988, someone unleashed a pair of programs on a computer attached to several "sensitive" networks (ARPANET and MILNET among them). The apparent purpose of the programs was simply to copy themselves to any computer for which their host had an Internet address. The copies on each of these new computers would then be run and the programs distributed to yet another generation of computers and run again.

The programs spread quickly from computer to computer, and in a short time as many as 6000 computers were affected. In addition, the programs' mad dash to find new hosts to "infect" was very CPU intensive. Performance on infected computers degraded seriously. Many encountered system problems and were rebooted only to be infected again.

The cumulative effect of this assault was big news. The nation's daily newspapers put the story on the front page, raised the specter of the nation's defense paralyzed by computer hooligans and gave the population a crash course in computer slang.

Everyone learned that programs which mount non-destructive invasions of other people's computers are called "worms," and that the term "virus" is customarily reserved for destructive or data-corrupting invaders. It has been difficult to make this usage hold up in the present case: whether they were destructive or not (a point still being debated on USENET) the spread of the two programs and their effects looked a lot more like a viral epidemic (or an alien invasion) than the steady progress of worms through topsoil.

At length, with much hard work from teams of people at MIT, UC Berkeley and many other network sites, order was restored. The adventures of these programmers and system administrators in encountering and finally dissecting the virus are documented in various USENET newsgroups, and anyone with access to USENET should read their accounts first hand. (The discussion in comp.risks, volume 7, issues 69ff is particularly good).

Thanks to the community-wide effort, there is a good technical description of the virus' operation. Only two versions of the infecting programs were distributed: one for Sun 3 hardware and one for VAX hardware. Both versions were targeted for a particular version of the Berkeley UNIX operating environment. Other machines, other operating systems and even other versions of UNIX were unaffected. Finally, the virus was distributed only over TCP/IP network connections. Computers connected to other sites via UUCP only were unaffected. (TCP/IP stands for Transmission Control Protocol/Internet Protocol; it is a protocol widely used for Ethernet-based networks. UUCP (UNIX to UNIX copy) is a protocol widely used to connect UNIX computers over standard serial lines.)

The virus running on an infected machine could be spread to other machines in a number of ways. Typically, the program would open a TCP connection to a victim and invoke the "sendmail" program. "sendmail" is commonly used to route mail from one computer to others across a network. It is not intended to be used interactively, and because routing mail requires privileged access to network control information, sendmail always runs as "root," the UNIX system's super-user account. The virus exploited the fact that at many sites, sendmail includes a "debug" option that allows the execution of other programs from sendmail.

Once sendmail on a target computer was invoked with the debug option, the infecting program transmitted the source code for a small C program, as well as commands to compile and execute it. Once compiled, this "bootstrap" program could then open its own connection to the infecting machine, download two pre-compiled versions of the controlling program (one for Sun, one for VAX), link this control program on the new machine and execute it.

When the controlling program was started on a newly infected computer, it conducted an extensive search for the addresses of other machines to which it could spread. As soon as a potential victim was found, the controlling program would spawn a copy of itself to attempt the break-in while the search for new victims continued. Repeated spawning of the control program is the most likely cause of the performance problems the virus caused.

Not all machines have the debug option built into sendmail. If the virus was unable to connect to its victim through sendmail, it would attempt to exploit the "finger daemon," a program used to provide a network-wide service that matches names with logins. Failing that, it would try to find accounts without password protection and use the remote shell ("rsh") to copy the bootstrap program to the target machine. If all else failed, it could resort to educated guessing of user passwords. A successful guess would enable the virus to use either rsh or telnet to distribute the bootstrap program.

The virus also did a reasonable job of concealing itself. Once on a new machine, it would hide the files it used by first opening and then unlinking them; the contents of the files would be available to the program, but the files themselves would not be "visible" to other users. Apparently the virus obscured its own argument list at run time, making it more difficult to spot in a listing of active system processes. And of course, various parts of the virus code were encrypted.

During the epidemic itself, system administrators found several creative ways to stop the virus: renaming the linker used to create an executable version of the control program, creating files in the public directory used by the bootstrapping program to conflict with file names the virus would try to create. Emergency patches for the fingerd and sendmail source code were distributed, as well as instructions for patching the binaries for these programs. Eventually, by disassembling the virus' object files, a way of signaling the virus to stop was discovered.

While the virus has been stopped, preoccupation with the virus and related questions runs high. Virus discussions have become a kind of meta-virus on USENET as the UNIX community pauses to consider some weighty questions: Was it the biggest disaster since the ARPANET crash of 10/27/80? Who did the deed? (A Cornell graduate student named Robert Morris, Jr. is the only publicly acknowledged virus-maker suspect.) Was it a public service or simply a nuisance? Are the victims of the virus somehow to blame for having tolerated poor system security? Just how much CPU time did the virus burn up, anyway? Why was it done? What did it cost to repair? Will it result in improved system security? Is it better to discuss security risks publicly or to restrict information about them?

The wondrous thing is that through all these questions and all their conceivable and conflicting answers and all the discussion the UNIX community has mustered on their behalf, there runs a single idea about what it means to use a computer: the idea that a computer is more than a way to make a living, the idea that a computer is more than a tool for personal aggrandizement or national defense, the idea that there is some intrinsic value in sitting at a terminal and being free. □

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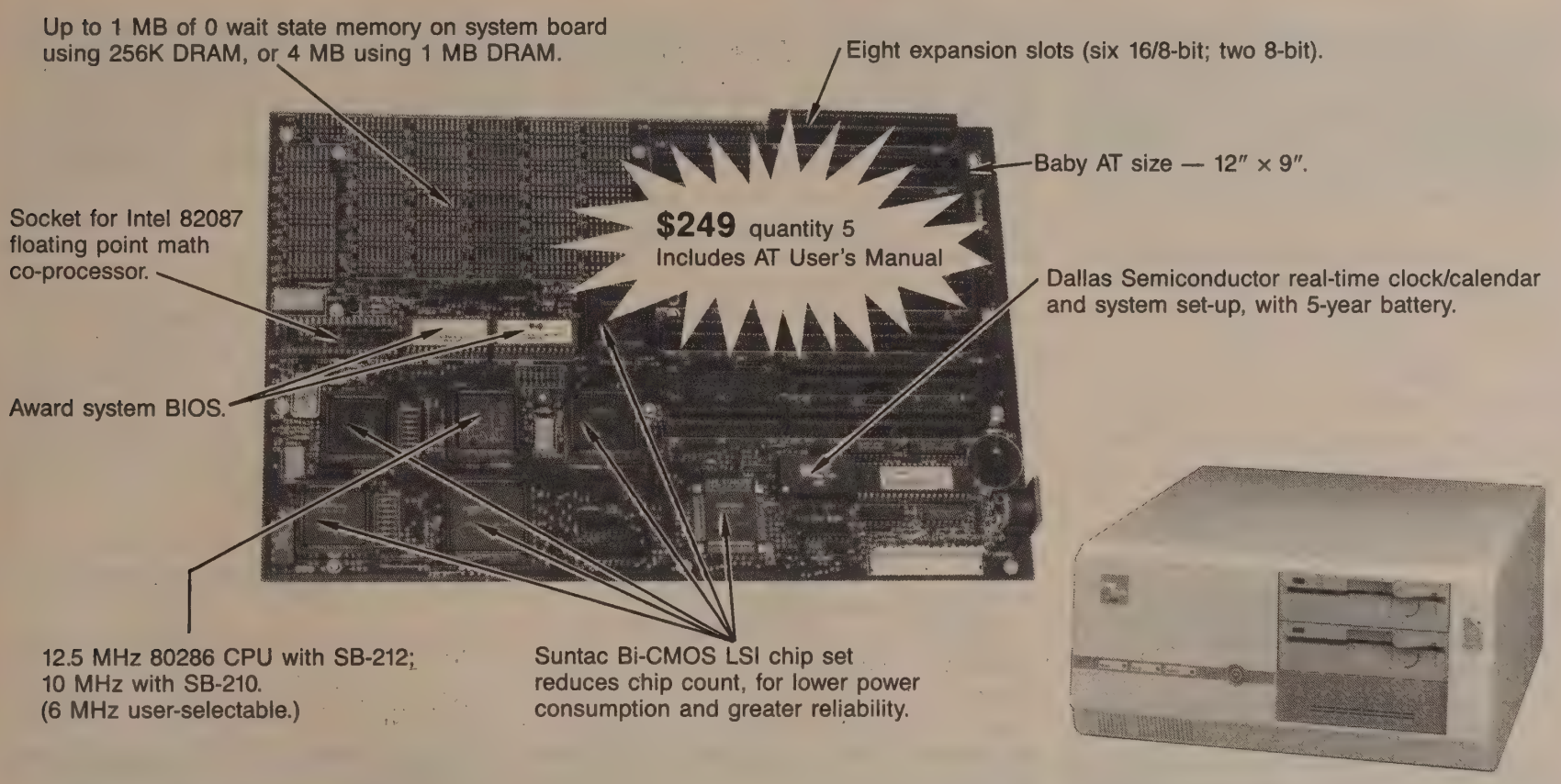
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BY MIKE MARKOWITZ

II Great Reasons To Celebrate

AppleFest, San Francisco, September 1988

Sinking majestically into obsolescence, benignly neglected by its Mac-minded makers, the Apple II series has been looking pretty sick lately. At AppleFest in San Francisco this Fall, it staged a surprising recovery. John Sculley unveiled a new computer, the Apple IIc Plus, and a new operating system, GS-OS, to revitalize the moribund Apple IIGS.

The IIc Plus

The IIc Plus has an internal 3.5" drive. It can run at a clock rate of 4MHz, which effectively triples the processing speed of many programs. Surprisingly, Apple's engineers were able to tuck the 20 watt switching power supply inside the case, eliminating the annoying external "brick on a leash." The downside is that you have to plug the computer into a wall socket; you can't rig up your own battery pack, unless you add some sort of DC to AC inverter.

The serial ports now use Apple's standard mini-DIN connectors, rather than the round 8-pin connectors found on the original IIc. The keyboard has been improved, with a big L-shaped Return key. The IIc Plus is four ounces lighter, and will carry a lower list price ($675).

The IIc Plus motherboard also provides connections for an internal modem. One company, Epic, was showing a combined 2400-baud modem and 256K RAM expansion card for the new machine. Other third-party vendors will offer hard disks that plug into the external floppy disk port, and flat-panel display screens.

Overall, the IIc Plus is a credible defensive response to the Laser 128 EX, the fast, low-priced, expandable Apple II clone that has captured a slice of the entry-level market since its introduction last year. The IIc Plus will probably be the last "Classic" Apple II (i.e., with the 8-bit 65C02 CPU chip).

In his keynote speech, John Sculley promised at least one more new Apple II within the next 18 months. This had better be the rumored IIGS Plus.

GS-OS

GS-OS, the new disk operating system for the IIGS, was the most significant event of the show. It marks a decisive break with the earlier versions of ProDOS 16—hence, the new name. "Old" ProDOS 16 was merely a shell that sat on top of ProDOS 8, and conducted all of its input/output transactions at the old Apple II's slow 1MHz clock rate.

GS-OS, in contrast, uses the full capabilities of the 65816 microprocessor chip, which runs at 2.8MHz. This may still seem pretty feeble, compared to the 16MHz of the Mac II, or the 25MHz of the latest Compaq, but raw speed is only a partial measure of computing power.

GS-OS displays a color graphic opening screen with an indicator showing the progress of the system startup. When the indicator reaches zero, the Desktop blossoms forth on your screen. The Finder is now much closer to the Macintosh look and feel: menus snap down quicker and windows zoom open and shut faster. Total loading time is much improved—only about 47 seconds. The new OS is compatible with older IIGS programs that conform to Apple's design guidelines. Programs that require a lot of disk access will run much faster.

There are icons for several new device types, including CD-ROMs and hard disk partitions. There will be File System Translators that allow programs to directly access very large files—up to 4000Mbs!—on disks created under other file systems, such as the High Sierra CD-ROM standard.

Many of the improvements in GS-OS are technical and esoteric. For example the "interleave" on formatted 3.5" disks has been souped up to 2:1. Roughly speaking, this means that the drive head can read a full track in only two revolutions, rather than four. When you format a disk ("initialize a volume") GS-OS now gives you a choice: new 800K at 2:1, "old" 800K at 4:1, or 400K—the old Macintosh single-sided format, which lets you get some use out of disks with one bad surface.

GS-OS smashes many of the limitations that fettered ProDOS 16. The number of online devices, open files and interrupt handlers is limited only by total memory size. One of the software engineers told me that they tried to test out how many little files could be open simultaneously. They gave up around 65,000.

With all of its new utilities, GS-OS takes up two 800K disks. The complete package, with manuals, will sell for $49, but customers who purchased a IIGS after August 15 can get it free. Apple's policy on updates is so wise and wonderful that I will quote the press release verbatim:

"Although many users will want the new manuals that come with the System Software package, Apple is also encouraging efforts to make the software available separately, free of charge from authorized Apple dealers, user groups and a variety of on-line services."

One sysop reported that Apple required him to sign an elaborate legal agreement before his on-line service was allowed to provide Apple system software for downloading. This included a promise not to use Apple system software for the manufacture of nuclear weapons. We can all sleep more soundly now...

AppleWorks GS

It appears that *AppleWorks GS* from Claris will be the first major commercial application to take advantage of GS-OS. The program was developed by StyleWare, the creators of *Multiscribe*, and Claris liked it so much they bought the company. Carrying a hefty $299 list price, this package integrates a word processor, database, spreadsheet, communications program and color graphics. The graphics can combine bit-mapped "paint" and structured "draw" functions on the same page! *AppleWorks GS* will require 1.25Mb of RAM, which should limit its penetration into the educational market (imagine trying to explain to a grumpy school board why you need another $500 per computer this year for extra memory). This is all the software that most home users will need, especially when the add-ons, desk accessories and enhancements start to appear.

In his keynote speech, John Sculley promised at least one more new Apple II within the next 18 months. This had better be the rumored IIGS Plus.

There will be low-cost upgrades (some time in the 4th quarter of '88) for owners of *AppleWorks* or *Multiscribe*. Contact Claris for details: (415) 962-8946.

With the arrival of GS-OS and *AppleWorks GS*, more and more IIGS owners will feel the need for a hard disk. For years, Apple II hard disks have been expensive, slow and plagued by a lack of standardization. As a result, less than 5% of Apple II owners made the leap into mass storage. At AppleFest there were signs of a thaw...with generally lower prices and some new ideas. But that's another story...

Mike Markowitz is a computer engineer for a large Southern California aerospace firm. He has been writing about Apple II computing since 1984. You can reach him on AppleLike (MOUSKOWITZ), The Source (SIG 060) or GEnie (M.MARKOWITZ2).

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USER GROUP NETWORK

BY MARY EISENHART

Okay, all you Tandy users, your counterparts in South America would like to hear from you. **Fabian A. Rodriguez**, president of **CoCoByte, El Grupo de Usuarios del Color Computer**, writes to tell us about his thriving user group. CoCoByte is in Cali, Colombia, and supports the Tandy Color Computer 1, 2 and 3. It offers software in French, Spanish and English and would probably welcome correspondence from other Tandy users. You can write to CoCoByte c/o Fabian Rodriguez, A.A. 5976, Cali, Colombia, South America. And tell him hello from us!

Closer to home, we recently heard from the **Apple/Valley Computer Club**, which, not surprisingly, is based in the San Fernando Valley and offers support to Mac and Apple users. However, in these connective times, it's nice to note that Apple/Valley also welcomes users of Amiga and IBM computers. The club meets on the second Wednesday of the month in meeting room #3 of the Valley Presbyterian Hospital, 15107 Van Owen, Van Nuys. The club operates its own BBS at (818)782-6471, and if you'd like your information from a real live human being, you can call (818)988-1752 and ask for **Bill**.

Orange County accounting types will be glad to know about a new group for users of **Peachtree Complete II** software. It meets the second Tuesday of the month at 1912 N. Batavia, Suite L, in Orange, on the northwest corner of Batavia and Grove. In addition to offering support to users of this popular business package, the **Peachtree Complete II Users Group** publishes a regular newsletter. If you'd like more info, call (714)637-8007, extension 600.

Also in Orange County, **Hank Strickland** writes to announce the **Amstrad Users Club of Orange County**. It meets on the third Saturday of the month from 10 am to 2 pm at the Santa Ana Library in the upstairs board room. The library is located at Civic Center and Ross Streets. Hank will be glad to provide additional details if you give him a call at (714)953-6471.

Aydin Dilber of Riverside writes in to tell us about the **Moreno Valley Macintosh Users Group**, which offers product demonstrations, a newsletter and more to interested Mac users. It also operates **The Cheese Factory BBS** at (714)788-9894, which runs 24 hours a day at 300/1200/2400 baud and offers public domain Mac software for download. To find out more about the group and its meetings, call (714)684-1337.

Also on the BBS front, **Sam Seivers** invites you to check out his **Dimensions 2000** board at (619)323-7956. Presented by Twenty-First Century Systems, the board features upload and download capabilities, reviews and articles, live programs and prizes for its users. Sam notes that file transfer is speeded up considerably by the fact that the board runs on a 12 MHz 286 machine (to say nothing of the fact that it supports the use of 9600 baud modems, should you be fortunate enough to have one).In these security-conscious times, validation is required for full access, so call now to get started.

The entertainment-minded will want to check out the **SCENIX West Network**, a 16-line data communications network which started up in the Southland on November 1. It features listings for LA and South Bay entertainment and regional services, as well as USA Today, SCENIX express travel service, an online catalog, email and real-time conferencing. You can reach SCENIX West at (213)372-2282; for further information you're invited to call the voice number, (213)376-5753.

That's about it for this month, as everybody seems to be getting into the seasonal frenzy. We'd like to extend our best wishes to all for all the upcoming holiday festivities, and our hopes for a happy and prosperous New Year. And in 1989 as in 1988, keep those cards, letters and bits of email coming our way: 5951 Canning Street, Oakland, CA 94609 for the hardcopy stuff, and **microx** on The Well (415/332-6106 direct, **{pacbell, hplabs, ucbvax, apple}!well!microx** for usenet).

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Remote Bulletin Board (Singapore). (065) 445-1646. 9600/2400/1200 24 hrs. 218 MB Online (IBM upload/download). Sysop: Umar A. Rahman

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Terrapin Station. (203) 656-0134. Grateful Dead Board. Sysop: Klaus and Gretchen Bender.

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Bertha Board BBS.(209), 239-9853, 300/1200/2400, 8-N-1, 24 hrs. MS-DOS, others. 95 Mb online. Emphasis on programming. Uploads and downloads. No fee but registration required. Sysop: Kenneth Roach.

Oasis Software Library.(209), 823-2803, 300/1200/2400, 8-N-1, 24 hrs. Shareware and PD for IBMs and compatibles. No fee but registration required. Sysop: Tim Campi.

Silicon Realms. (209) 754-5530. 300/(1200 Soon) 9:30AM to 6:30AM.Formerly Motherload 64. Commodore, PET & Plus/4. Programmers board, Continuing & Short Story boards, FRPG. Sysop: Joe Commodore

SMERDON'S CASEL (California Attractions, Sights and Entertainment Listing), (209) 521-4910, 8-N-1, 24 hrs., 300/1200/2400. Information on over 700 things to do and see in California. Free. Sysop: Sharon Smerdon.

The Backdoor BBS.(209), 952-9430, 300/1200/2400, 8-N-1, 24 hrs. MS-DOS oriented board. Lots of software, online chess game, much more. Sysop: Randall Fox.

212

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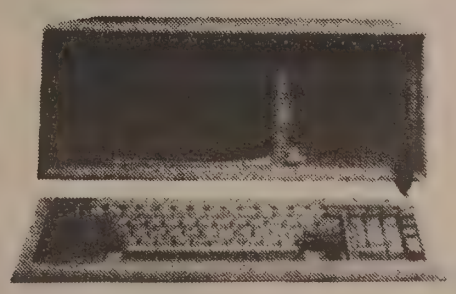

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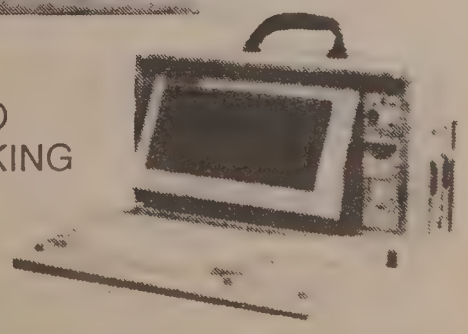

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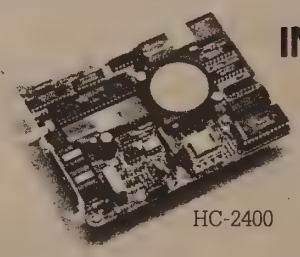
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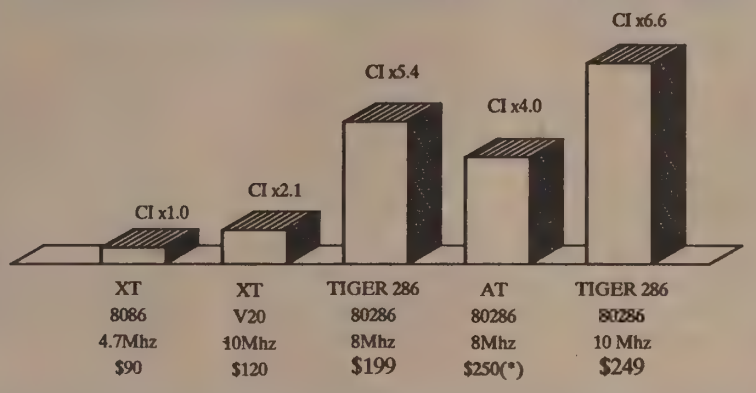

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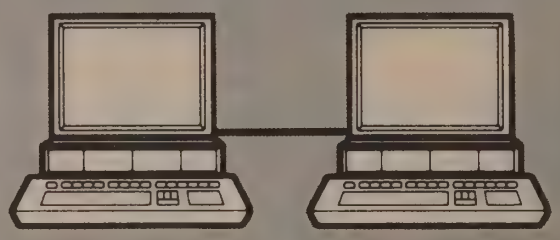

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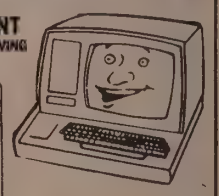

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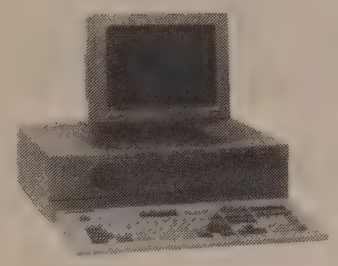

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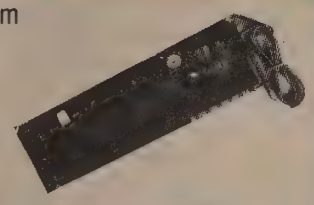

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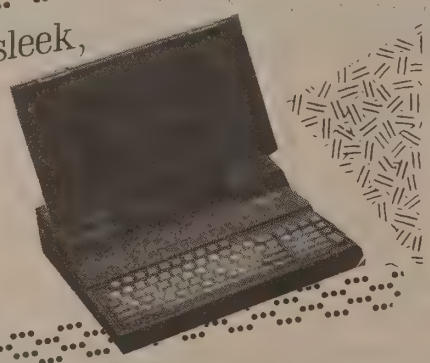

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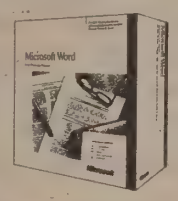

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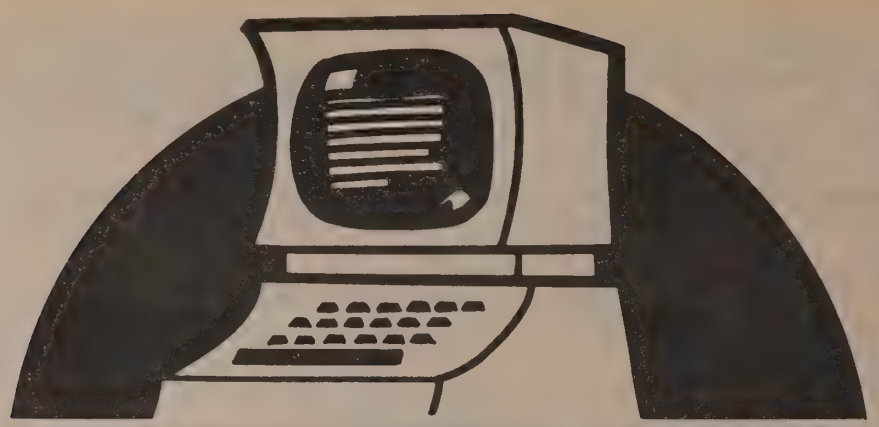

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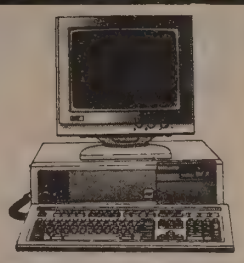

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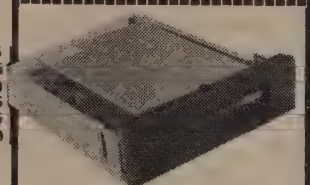

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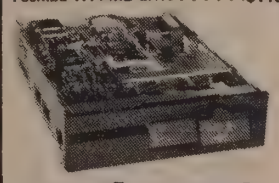

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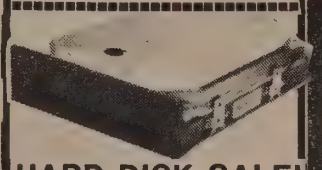

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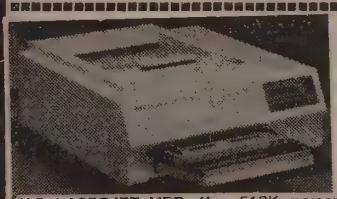

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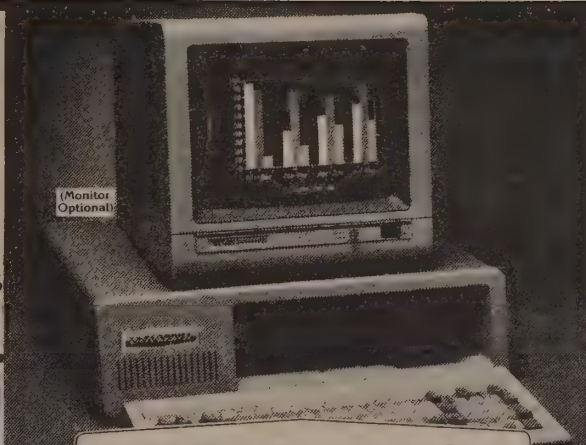

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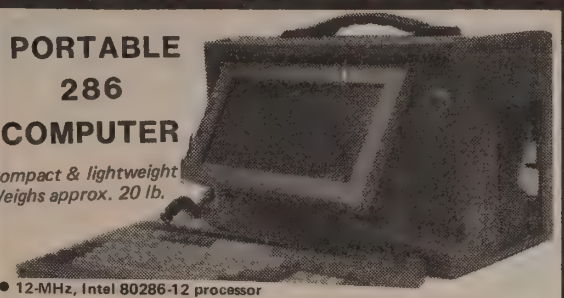

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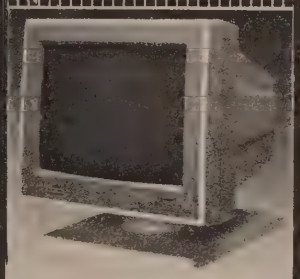

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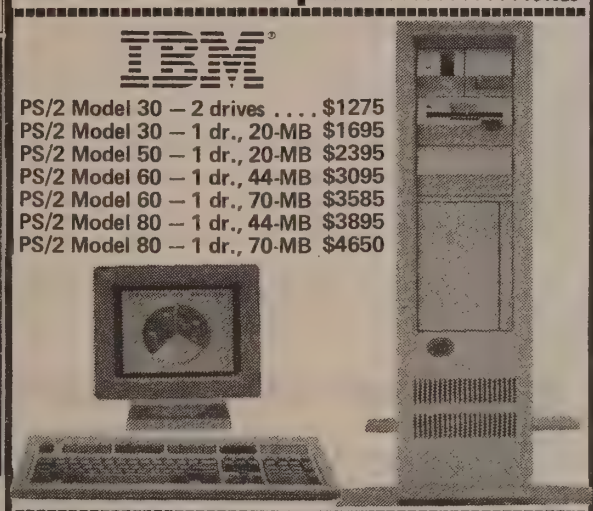

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The Bear's Lair. (818) 988-6694, 300/1200/2400, 24 hrs. Macintosh oriented, 200Mb on line, multiple message sections. Sysop: Bruce Gerson.

The Board with No Name. (818) 785-3340. 300/1200. A gay-oriented BBS. No hourly fees; no time limit w/ paid access. 16 lines.

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TUG-NET (Technical & User Groups Network). (818) 882-6045. MS/DOS and CP/M supported. Voice: (818) 957-4721.

Valley On-line Shopping Network. (818) 772-4227. 300/1200 (soon to be 2400). Provides local businesses the opportunity of selling their products on-line to local and national computer consumers. Sysop: BRAINS.

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24th Street Exchange. (916) 451-7179. 300/1200/2400 8-N-1 24 hrs. Opus-based system. Free access. Lge. selection pub. domain files for IBM & compatibles. Special interest areas. Sysop: Don Kuhwarth/Laura Stua.

Dial-Your-Match. (916) 275-1265. Redding. (916) 736-0739. Sacramento.

Hackney's Hideout BBS. (916) 961-1042. 1200/2400 8-N-1. Includes AT&T users conference. Sysop: Rich Hackney.

Night-line Network Central. (916) 331-5043, 300/1200, 8:00 PM to 8:00 AM daily. Forum for individuals, clubs and organizations that want to network nationally with others. Sysop: Eric Thomas.

Phoenix Landing BBS. (916) 966-8243. 300/1200/2400. Macintosh oriented but many other computers are supported. File areas for Mac and other computers. Supports echomail conferences including ECHOMAC and BAYMAC.

ASSOCIATIONS

AACCPAC Accounting SIG Of UCLA Users Group. Meeting: 2nd Wednesdays @ 7 PM. Users, CPAs, consultants and other business people interested in sharing information on Computer Associates ACCPAC Accounting Software. Call Donna Miller, (213) 393-0244.

California Educational Computing Consortium CCCE. For information write Herb Garrett, Long Beach City College, 4901 E. Carson Street, Long Beach, CA 90808.

Computer Professionals for Social Responsibility. Meetings: Most third Wed. 7:30 PM UCLA. CPSR/LS focuses on computer system risk and reliability and on privacy and civil liberties issues.

International Blind Users Group (I-BUG). Part of the National Association of Blind and Visually Impaired Computer Users. Membership consists of access to CompuHelp, a 24 hour online database/bulletin board system, and receiving CompuHelp On-Disk, a modem database-bulletin board system on two double-sided disks. (916) 783-0364 or 645-8036.

L.A. Real-Time Problem Solvers. Meetings: 4th Saturdays, 10 AM to 1 PM. Hawthorne Public Library, 12700 S. Grevillea Ave., Hawthorne. We speak A/D, SBC, RISC, FORTH and C. We support real-time, real-world hardware and software problem solving, such as firmware, device drivers, instrumentation and very smart toasters. (213) 371-0589.

North Orange County Computer Club (NOCCC) Meetings: Monthly on Sunday, @ Chapman College near downtown Orange. Help for beginners, SIGs, educational activities, monthly newsletter. Open to any computer user. (714) 998-8080.

Realtor Microcomputer UG (RUG). Meetings: 4th Thurs. 7 PM Pasadena BOR, cnr. Orange Grove & Los Robles, Pasadena, CA.

USER GROUPS

AMIGA

Amiga Friends. Meetings: 3rd Sun. Rancho Santiago College, Rm R-124, 17th & Bristol, Santa Ana. Call for current meeting info: (714) 775-7237 (24 hrs.) or write: P.O. Box 4186, Huntington Beach, CA 92605.

Amiga Special Interest Group. Meetings: 1st Sunday except holidays. Chapman College, 333 N. Glassell, Orange, CA. Amiga SIG is part of the North Orange County Computer Club, a thousand member organization together 12 years.

Amiga Users Group of Long Beach. Meetings: 3rd Sun. 1-4 PM Mid-Cities Nat'l Bank, NE corner Lakewood & Artesian, Bellflower. We have a class that meets the second Sat of each month,1 to 4 pm. Something different every month.

Bits & Pieces Amiga Group of Anaheim. Meetings: each Tues. 6:30-10 PM 1130-A North Kraemer Blvd., Anaheim, CA. DOS Classes, tech. help & more. BBS: (714) 630-8897.

LAAUG-Los Angeles Amiga Users Group. Meeting: 3rd Wednesdays @ 7:30 PM. Veteran's Auditorium at Overland Ave. & Culver Blvd. Many SIGs, Rookie, music, video, monthly PD disks.

Pacific Computer Club. Meetings: 2nd Thurs. 7 PM 391 S. Madison, Pasadena, CA.

San Fernando Valley Amiga Users Group (SFVAUG). Meetings: 2nd Thursdays, 7 pm, American Legion Hall, 7338 Canby Ave., Reseda. Call: Randy, (818) 719-9211.

South Bay Amiga Dudes. Meetings: 3rd Thursdays, 7 pm, Redondo Beach Blvd., Lawndale. Call: Charlie Breene at (213) 540-2834.

South Orange Commodore Klub (SOCK). Meetings: 3rd Saturday 9:00 A.M. Union Savings, 23688 El Toro Road, El Toro, CA. For Commodore 64/128 users and Amiga users. One-hour general meeting is followed by separate group meetings for each.

AMSTRAD

AMSTRAD User Group, U.S.A. Meetings: 4th Tues. 7 PM & 8 PM Venice High School, 13000 Venice Blvd. Since Sears dropped the PCW8256, group formed so users/owners can support each other.

Amstrad Users Club Of Orange County. Meetings: 3rd Saturdays, 10 am til 2 pm. Board Room upstairs in the Santa Ana Library, Civic Center & Ross streets. For more information call: (714) 953-6471.

APPLE

Apple/Valley Computer Club. Meetings: 2nd Wednesdays, 7:30 pm, Valley Presbyterian Hospital, meeting room #3. Discussion on Apple, Mac, Amiga, IBM. BBS: (818) 782-6471. Up loading/down loading. Visitors welcome. Eamon games, misc. Voice: (818) 988-1752.

Original Apple Corps. Meetings: 2nd Sun. 12:00 Noon 3rd Floor Community Room, Santa Monica Mall. First Apple group ever. SIGs for AppleWorks, Telecomm, Educators, Macintosh. Call Fred Duffy at (213) 396-5515.

Tri-City Apple Users Group. Meetings: 3rd Thurs., 7:00 PM, 50 N. Hill Ave., Pasadena. Call (818) 846-6682. Friendly Apple II experts.

ATARI

Atari Computer Association Of Orange County. Meetings: 2nd Sun. Rancho Santiago College, Room W101, Santa Ana. BBS: (714) 540-7378.

Pasadena Area Local Atari Computer Enthusiasts (PALACE). Atari 8-bit and ST support. Chris Roberts, (818) 359-1697, 220 N. Encinitas Ave., Monrovia, CA.

Santa Clara Valley Atari Computer Enthusiasts (SCVACE). Meetings: 1st Thurs. 7PM Mint Canyon Moose Lodge, 18000 W. Sierra Hwy, Canyon Country. 8-bit group. Atari ST special group now forming.

South Bay Atari ST Computer Club. Meetings: last Mon. 8 PM 15331 Praire Ave. Lawndale.

COMMODORE

Bits & Pieces Commodore Computer Group of Anaheim. Meetings: each Tues 6:30 PM 1130-A N. Kraemer Blvd. (Kraemer & La Palma), Anaheim. Offers public domain software, demonstrations, interactive training on your computer. $33 annual dues.

Commodore 64 Software Users Group. For new Commodore owners. One on one help. Call (714) 531-2977 for info.

Mother Lode Commodore Users Group. Meetings: 2nd & 3rd Thursdays. Calaveras County Water District Board Room. Supports the Commodore PET, VIC, 64, Plus/4, C-16 & 128.

Nebula 6. Call BBS for more info & online glance at what group offers. BBS (714) 595-6577 300/1200/2400. Write for info: P.O. Box 1071, Walnut, CA 91788.

OKOK Computer Users Group. Meetings: 2nd Wed. 7-9 PM Altadena Public Library, 600 E. Mariposa. Call (818) 794-3243. Serves, Osborne, Kaypro, Commodore C128, PCs and compatibles and both MS-DOS and CP/M operating systems.

Orange County Commodore Technical Users Group (C-TUG). Meetings: 4th Sun. 11:00 AM ,4th & Tustin, P.O. 1497, Costa Mesa, CA . 92628. Newsletter; 2 BBS's; door prizes; SIGs in Comal; DOS protection data bases; wpros; & BASIC. Custom software, ROM chips.

Pacific Computer Club. Meetings: 2nd Thurs. 7 PM 391 S. Madison, Pasadena, CA.

Pasadena Commodore Computer Club. Meetings: 1st and 3rd Weds. 7:00 PM Circadian Room, Pasadena City College Cafeteria. Colorado Blvd & Hill, Pasadena. Call (818) 447-2212 after 2:30 PST or write P.O. Box 163, Arcadia, CA 91006.Supports C64 and 128 machines.

South California Commodore Users Group. Meetings: 3rd Tuesday each month, 7:00 P.M., MidCities National Bank, Lakewood and Artesia Blvds., Bellflower, CA.

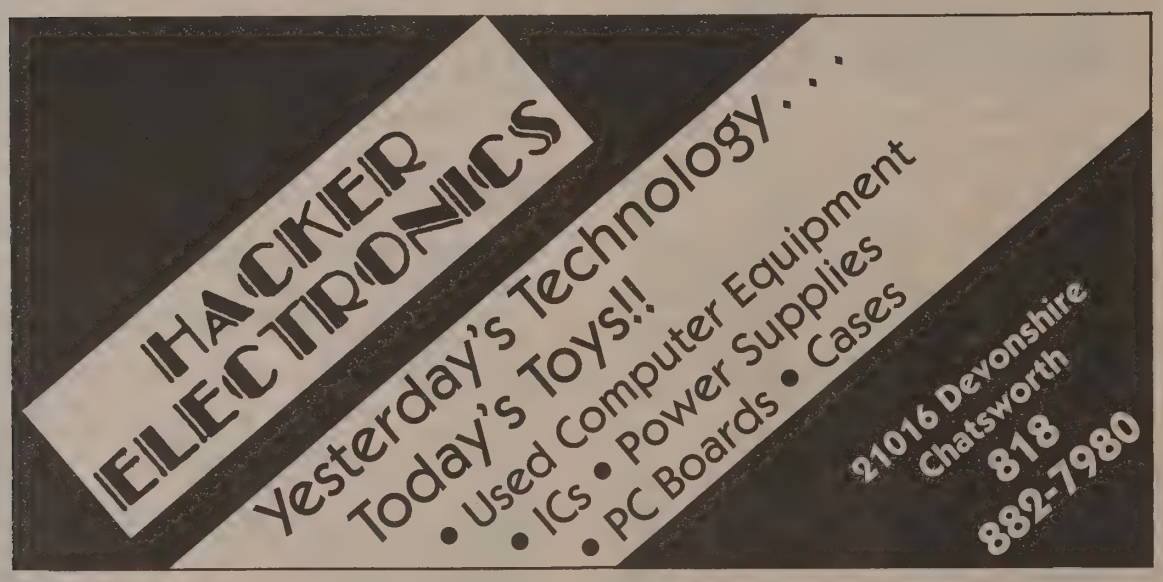
South Orange Commodore Klub (SOCK). Meetings: 1st Wed. 7 PM Laventhol & Horwath, Exec. Conf. Rm.7th Fl., 3699 Wilshire Blvd., LA, CA.

dBASE

Valley West dBASE Users Group. Meetings: 3rd Mon. 7:00 PM Blue Cross Of California, 21555 Oxnard St., Woodland Hills. Call (818) 343-9033 or write P.O. Box 16971, Encino, CA 91416.

DEC

DECUS Rainbow Pacific PC-LUG. Meetings: 2nd Wed. 7:00 PM Digital Equipment Corporation, 6101 W. Centinela, Ave., Culver City. Digital Equipment Computer Users Society. Free to DEC users. Call Karen Danforth (818) 787-8736 or write P.O. Box 2278, Van Nuys, CA 91404.



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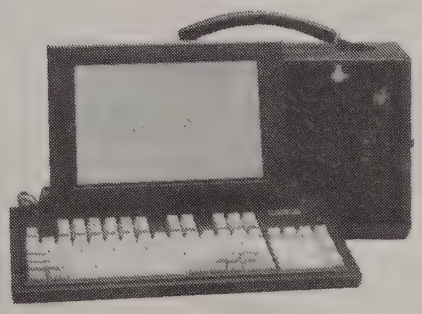

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San Fernando Valley Epson QX User Group. Meetings: 3rd Tues. 7 PM Fallbrook Sq. Comm. Rm., Fallbroook Mall, 6633 Fallbrook Ave. Canoga Park.

IBM AND COMPATIBLES

Calsonic PC Club. Meetings: 1st Tues. 5:15 PM 9 Holland, Irvine, CA.

Greater South Bay PC User's Group. Third Thursdays, @ 7 PM, Building behind Christ the King Lutheran Church, 2706 W. 182nd St. Torrance. Newsleter, BBS, more! Guests welcome. Call for more information. Evening: (213) 532-2123.

IBM & Compatibles Users Group-Ontario Area. For information call: (714) 982-1270.

Kenny's Computer Club. Meetings: Each Saturday 8:00 A.M. t133 Locust St. Apt. 19, Long Beach, CA. For those with an interest in graphics, DTP, Lotus, Autocad, games, databases and word processing.

Kern Independent User Group. Meetings: Write Kern Independent PC User Group, P.O. Box 2780, Bakersfield, CA 93303.

Long Beach IBM Users Group. Meetings: 3rd Tuesdays. 7 PM, Woodruff Medical Plaza, 3816 Woodruff Ave., Room A, Long Beach. Contact: Jim Wells. Call: (213) 439-7114.

OKOK Computer Users Group. Meetings: 2nd Wed. 7-9 PM Altadena Public Library, 600 E. Mariposa. Call (818) 794-3243. Serves, Osborne, Kaypro, Commodore C128, PCs and compatibles and both MS-DOS and C/PM operating systems.

Orange Coast IBM PC User Group. Meetings: last Sat. 9 AM Science Hall, Orange Coast College, Costa Mesa, CA.

Orange County IBM PC Users Group. Meetings: 2nd Thursdays 7:30 PM. Bradford Retirement Community Center, 1180 N. Bradford, Placentia. Meetings feature guest speakers on hardware and software topics related to the interest of our members. Other activities include sharing tips and problems, access to club library and a club newsletter. Call: Mike Lyons, 2114 W. La Palma, Anaheim, CA 92801. (714) 774-3236.

Pacific Computer Club. Meetings: 2nd Thurs. 7PM 391 S. Madison, Pasadena, CA.

Pasadena IBM Users' Group. Meetings: 3rd. Wed. CalTech, Bridge Bldg., Rm. 201.

PC*UG Computer Club. For Hughes Aircraft Employees. Call (213) 334-3422.

QUICK & EASY Mailmaster User Forum. Meetings: monthly LA/Airport area. Users interested in maximizing performance of Quick & Easy.

Saddleback College IBM-PC Users Group. Meetings: 3rd Sat. Room 210, Business and General Science Building, Saddleback College, Mission Viejo. Call Susan Gordon at (714) 582-4650.

South Bay Users Group (SBUG). Meetings: 1st Sun. Mercury Savings, Long Beach, CA.

South County PC Users Group. Meetings: 3rd Sat. 9 AM Great American Savings, 23688 El Toro Rd., El Toro, CA.

Technical Users Group (TUG-NET). Meetings: Call for info (818) 882-6045. BBS (818) 882-6045.

The IBM & Compatibles User Group (ICUG). Meetings: 4th Thurs. 6:30 PM or 7:30 CAL Lutheran Univ., 60 W. Olsen Rd., Thousand Oaks. Group is 5 yrs. old & has 150 members Meetings begin at 6:30 for beginners, 7:30 regular members.

The Southern California K-Man Users Group. Meetings: 1st Wednesday, 7:00 P.M., Laventhol and Horwath, Executive Conference Room, 7th Floor, 3699 Wilshire Blvd., LA. Demo of the month features new software and hardware.

TRS Nybblers. Meetings: 1st Wed. 7 PM 2006 W. Magnolia, Burbank. Supports MS-DOS, CP/M, IBM or IBM clones.

VICUG (Valley IBM/Compatible Users Group). Meetings: 4th Fridays, 7:30 pm, Mercury Savings Bank, 7040 N. Sepulveda, Van Nuys. Call: Harry Tischler, (818) 997-6000.

KAYPRO

OKOK Computer Users Group. Meetings: 2nd Wed. 7-9 PM Altadena Public Library, 600 E. Mariposa. Call (818) 794-3243. Serves, Osborne, Kaypro, Commodore C128, PCs and compatibles and both MS-DOS and C/PM operating systems.

LEADING EDGE

Leading Edge Computer User Group of Ventura County. Meetings: 2nd. Sat. 10 AM Camarillo Library, 3100 Ponderosa Dr., Camarillo, CA. Lectures on hard/floppy disk usage; program demos; beginner classes. Single: $20, couple $25.

MACINTOSH

California State University Macintosh Users Group. Meetings: California State University, Long Beach.

Conjo Ventura Macintosh Users Group, Inc. Meetings: 1st Thursdays, Thousand Oaks Public Library, 1401 E. Janss Road, Thousand Oaks. Call: Ed or Ellie Darling at (805) 584-8733.

LAMG (Los Angeles Macintosh Group). Meetings: Call (213) 278-LAMG or write 12021 Wilshire Blvd. #349, Los Angeles, CA 90025.

MacValley. Meetings: 3rd Tues. 7:30 PM Burbank High School Cafeteria at Burbank Blvd. and Third St. Call David Lagerson, (818) 998-5546or write P.O. Box 4279, Burbank, CA 91503.

Moreno Valley Macintosh Users Group (MVMUG). Product demos, newsletter, SIGS, BBS, more! For information about the club and meeting call: (714) 684-1337.

Original Apple Corps. Meetings: 2nd Sun. 12:00 Noon 3rd Floor Community Room, Santa Monica Mall. First Apple group ever. SIGs for AppleWorks, Telecomm, Educators, Macintosh. Call Fred Duffy at (213) 396-5515.

SBAMUG (South Bay Apple Mac User Group) Meetings: Last Wednesday of each month, 7:30 PM, Ticor Title, 4240 Artesia Blvd., Torrance. Call (213) 316-7738.

South Coast Macintosh Users Group. Meetings: First Tuesdays, @ 7 PM, Goleta Library. Publishes a newsletter with reviews, offers advice, support for Mac users, discounts at local dealers. Call: Vince Leamons, 685-7295.

West Orange County Macintosh Users Group (WOCMUG). Meetings: Last Tuesday. F & M Bank in Rossmore Center, Orange County, CA.

NETWARE

Orange County Network Users Group (OCNET). Meetings: 2nd Tues. Wyle Labs, Irvine CA. Open to users, consultants, all interested in NETWARE. Call Mark at (714) 955-0616

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OPEN SYSTEMS

Open Systems Accounting, So. Cal Users Group (OSASCUG). Meetings: 4th Wed. Wyle Labs, Irvine, CA. Users of Open Systems, Altos Accountant, CADO, & Rexon accounting software. Open to end users, dealers and consultants. Call Mark at (714) 955-1724.

OSAS Systems Users Group Los Angeles (OSASUGLA). Meetings: 1st Wednesdays. Welcomes consultants, CPA's, dealers, users and QI's interested in sharing information on OSAS and related products. Call Fane, (213) 452-1335. 2716 Ocean Park Blvd., Santa Monica 90405.

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OKOK Computer Users Group. Meetings: 2nd Wed. 7-9 PM Altadena Public Library, 600 E. Mariposa. Call (818) 794-3243. Serves, Osborne, Kaypro, Commodore C128, PCs and compatibles and both MS-DOS and C/PM operating systems.

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Los Angeles - Wilshire Color Computer Users' Group. Meetings: 2nd Sat. 12:30-5:30 PM Felipe de Neve Library's Comm. rm., 2820 W. 6th St., LA, CA.

South Bay Users Group (SBUG). Meetings: 3rd. Fri. Mercury Savings, 22939 Hawthorne Blvd., Torrance, CA.

TEXAS INSTRUMENTS

LA 99er Computer Group, 4th Wednesdays, August 24, Sept. 28, Oct. 26. @ 7:15 PM, Torrance Public Library, Torrance Blvd. @ Madronna. Call: Teresa Masters, (213) 271-6930.

San Fernando Valley TI-99/4A User Group. Meetings: 2nd Wed. 7:30 PM Doctor's Conf. Rm., Sherman Oaks Hospital, 4929 Van Nuys Blvd. Call for info: (818) 248-9558.

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Timex-Sinclair Users Group. Meetings: 3rd Mon. 7 PM 11828 Jefferson Blvd., Culver City, CA.

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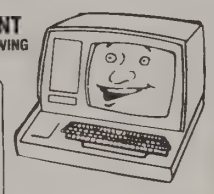

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it's optional, as opposed to something you've got to pay for if you're not going to use it?

There are a whole bunch of things...where's his floppy? Would you call up Canon [who did the disk drive] and ask them how much the removable media *really* costs—not what he's charging for it? Because it costs 2x what he's charging for it!

Would you talk to him about his *mainframe* architecture? Which, if you sit down with Bill Joy and ask him, "What does he mean by mainframe architecture?"—he means DMA. You should have heard the conversation between Andy [Bechtolsheim] and Bill. Andy came running up to Bill and he goes, "My God, he's got mainframe architecture." Bill says, "What are you talking about?" He says, "Well, he announced that he's got mainframe-like architecture and all this other stuff." Bill says, "Yeah, you know what it is, Andy?" He goes, "No." He says, "Its D-M-A." Andy says, "We've been doing that for years. Oh.. Okay, no problem." He runs back into his lab...

I mean, it's absolutely magical that the guy hasn't shipped anything. Look at the press he gets—unbelievable!

The other thing I think is important to understand is—you have to look at the financial structure of NeXT. He owns 63%, Ross Perot owns 16%, a few founders each own 2%, some universities own 1%. That leaves very little left over. Their burn rate is massive; they've got 200 people. That's a $3 M a month burn rate. Think about getting to next summer with prototypes and all the rest of it—the burn rate he's talking about. He's got a huge, underabsorbed manufacturing operation. He spent $100,000 on his logo, who knows how much on his announcement?

How's he going to hold onto his people with stock options that have to be diluted and are such a small percentage of the company? How's he going to hire and hang onto people? Do you really believe he has a different management style than he had at Apple?

Those are just a few of the questions, thoughts and issues that I would consider around that. Where's his distribution channel?

The price does seem pretty high for a student—maybe the ones who buy the Mac IIs. But given what he's got, I'm surprised he doesn't go to the industry.

No distribution channels. Do you know how expensive it is to build one? We have been growing and building one faster than it's ever been built before. Yet we had stock options that were worth something—to give to people, to get them to come. His stock options aren't going to be worth anything because of the burn rate.

Do you realize how much cash he's used, and he's gotten to zero dollars in revenue? We used $4 1/2 million in our first two years. We were a $40 million company before we used up $4 million in cash. We used another 10 to get to $100 M, and we used another 20 to get to $250 M. We went public on about $50 M in investment. He's going to use that much up getting to summer.

Think about it. How can you make any money and hire the people you need to take it to industry? You can't do it. It is fundamentally a flawed business model in the way he's done it. It's too late. It's DeLorean.

As long as we're on these kind of subjects...The Presentation Manager was just released. Will the 386i support it in future model? Do you think it's important?

Right now, we're putting all our efforts and energies into Open Look. In the same way—why did we do another operating system on top of UNIX? Because there was software written for DOS that was never going to run under UNIX. And so we had to go do DOS.

We believe we won't have to do anything other than V.4 as an operating environment, because all software that is important, high-volume, profitable software will have as one of its platforms V.4. Same is true of Open Look.

We believe there will be very few, if any, applications over time that...I don't care about the no-volume, nonprofitable companies that can't afford to port to Open Look. If you can't afford to port to Open Look then you're not worth having on Open Look. It's kind of one of these self-fulfilling situations. We believe that all important software will run under Open Look. If that doesn't become the case, then we would look at other operating environments. I'm not sure it would be Presentation Manager.

Part of the reason we believe that is that software developers who are, for instance, competing against Microsoft, don't necessarily want to be based completely on a Microsoft windowing environment.

Especially since I know at least one person who says that Microsoft Windows on a 386 is what drove him to the Macintosh.

That's the neat thing, I think, about the X11-NeWS/Open Look environment—that it's a high performance environment built for the desktop architecture of the '90s. It's built with high performance 32 bit microprocessors in mind, portability in mind, user programmability in mind, and it took us a little longer than most people to get this stuff out, but it was built with a much more 1990s foundation and structure and strength around it. And that portability is something you can't add on to it, and we just think it fundamentally has the support and the energy and the V.4 momentum behind it. So, we're in pretty good shape.

What do you think you'll be able to put on our desktop in five years for $5,000?

I don't know. You'll probably have somewhere between four and eight multiprocessors. Those will probably be 50 MIP chips. So, you'll have between 200 and 500 MIPS on the desktop.

You'll be able to calculate those spreadsheets really fast.

That's a really good point. There's got to be a lot of software work between now and then. But then you'll start to be able to do true voice I/O on the desktop, and you'll have much higher speed networks, and you'll be able to access the server world in a much better way. It will take a while.

You know, Sun could have far and away an order of magnitude easier user interface than the Mac, because it has so much more power and functionality and bits and all the rest of it. It just takes a while for that software to get written. And it will be a while for that to happen. So it will get there eventually.

A complete shift of gears, since you're on record as endorsing Tom Campbell for Congress—what would you like to see happening in the larger political arena which would be good for Sun and good for the industry?

I think the basic issues we're dealing with now—one is the cost of capital. These are not new statements, but that is a root cause of the reason why the Japanese have a monopoly on the DRAM business. And therefore, the Japanese have the ability to control Sun's growth. I think there's fundamental problems with the tax structure in this country, where we tax savings, not consumption—that we ought to move to consumption taxes, not savings taxes. Which requires a major overhaul. I think we have a serious problem with capital gains, and that we ought to encourage capital gains differential.

I think we need to find a way to address countries which have CEOs of industry in their government—that are effective. In other words, MITI can tell Toshiba to only ship so many DRAMs, and Toshiba will say, "OK." Can you imagine Ronald Reagan calling Scott McNealy and saying, "Only ship 2000 workstations next month"? Can you imagine that?

I can imagine what Scott McNealy might say.

Oh, you can! You *can*! But in Japan, they go, "Hai!" [yes]

You know, absolutely, we need to find ways to deal with, and to compete in that environment, because MITI has shown its ability and willingness to exercise monopoly power with respect to DRAM. And every toaster in the world will be shipped with DRAM in five years—your TVs, your automobiles, all of your telecommunications equipment. Everything will have DRAM in it. And they have monopoly control over that right now.

Other than that, everything's in great shape! ■

On Steve Jobs: "How's he going to hold onto his people with stock options that have to be diluted and are such a small percentage of the company? How's he going to hire and hang onto people? Do you really believe he has a different management style than he had at Apple?"

"MITI can tell Toshiba to only ship so many DRAMs, and Toshiba will say, 'OK.' Can you imagine Ronald Reagan calling Scott McNealy and saying, 'Only ship 2000 workstations next month'? Can you imagine that?"

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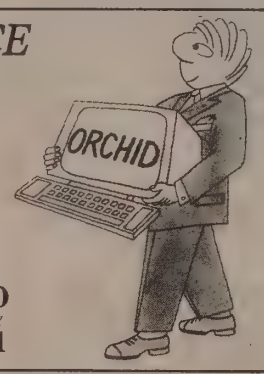

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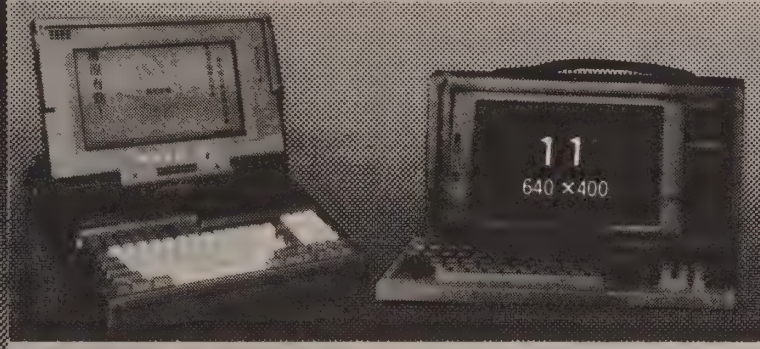

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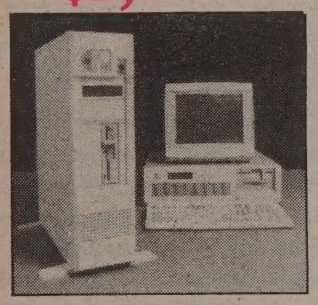

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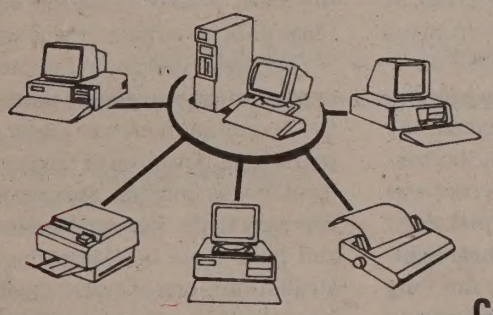

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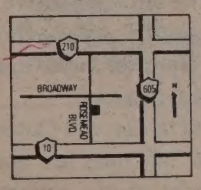

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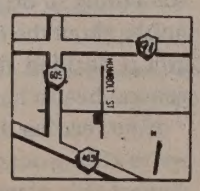

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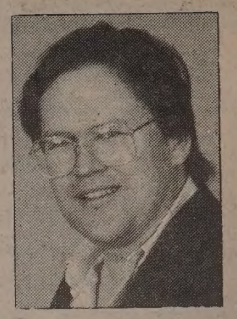

When Will It End?

Once a year I like to pull out my clip file to see what's really bothering people who use computers. Let's see what we have.

Wow! Look at the clippings about VDT hazards! Golly, VDTs are responsible for bad backs, varicose veins, eye problems and possibly miscarriages (depending on the source of information). Some kids are developing weak eye muscles from staring at a VDT from too close. X-rays are mysteriously leaking from the leaded glass, say some. Other mysterious things are happening and the fate of civilization hangs in the balance. I see that one group would like the VDT banned as a general health hazard.

It's apparent that we're killing ourselves with these technologies. To combat this plague of scribe-itis, book mania and typewriter madness, there was an old solution. Burn books and destroy the machines. Maybe we should consider a computer burning!

Now those are some interesting clippings. Let's see what else I have. Oh! Here's some letters dated 840 A.D. from my lost relative Gustav Dvorak. Interesting. It seems that scribes are up in arms and want hazardous duty pay (in the form of goat heads) for recopying the same book over and over. Some say that the ink is poisonous and causes all sorts of ailments. Others say scribe work is bad for the back and all that sitting causes varicose veins. Children are being taught how to write at too early an age, says the note, causing eye problems from all that close reading and writing. And apparently rewriting all that information makes it easier for witches to control your life. Pretty scary, kids. I see one group would like the quill and the business of book copying banned as a general health hazard.

Let me dig a little deeper into the pile. Ah, here's some broadsides printed in 1550. It's an article by Isaac Dvorak. It seems that the citizens are panicked over the propagation and use of the dangerous printing press. Apparently fumes from the ink are poisoning the public and operators of the presses are complaining of bad backs. Since reading material is becoming relatively common, there is a fear that people will lose their ability to speak. Complaints about people sitting too much and reading has resulted in the establishment of special varicose vein clinics. Too much reading is said to cause miscarriages in women and nearsightedness in young children. Hmmm, I see one group would like the printing press banned as a general health hazard.

Wow! Here's one from Sir Spencer Dvorak. In an article he wrote for the London *Times* dated Feb. 4, 1820, he says that he discovered tribal documents in dark Africa which indicated that tribal drums used for inter-tribal communication were resulting in the ruination of society there. Apparently the drummers were complaining of bad backs and varicose veins from all the sitting and pounding. Not to mention headaches! The headaches were thought to affect vision, and many drummers reported dizziness. The beat was also making people jumpy and thought to be a leading cause of birth defects too. A concerted effort was being made to ban the drums as a general health hazard.

This was getting pretty interesting. I dug further and found an 1880 article by John E. Dvorak, my great-great-granddad. It was an expose of the hazardous typewriter. It seems that the typewriter was a cause of arthritis in the fingers. The typed word was so small that it was thought to cause nearsightedness in young children. Furthermore, the long hours of sitting at the typewriter were causing people to be hunched over, thus straining the back. Varicose veins were a direct result of too much typing, and all the pounding on the keyboards was surely the cause of uppityness in women. It had something to do with physics. They were making noises about the right to vote. They must be ill. One group decided that they should be banned as a general health hazard.

After reading this, I have to say it's apparent that we're killing ourselves with these technologies. To combat this plague of scribe-itis, book mania and typewriter madness, there was an old solution. Burn books and destroy the machines. Maybe we should consider a computer burning!

"Will this forward march towards a technological Armageddon ever end?" asked the Rev. Daniel Dvorak in 1916. "We must fight this thing called progress in every way we can."

The worst part of this is that it's obvious to all the writers of the past that these inventions ruin man's relationship with women. It was bad enough when a few women secretly learned how to read and write during the scribes day. But it was getting out of control with the invention of movable type. First of all, women were getting ideas! And these weren't the ideas of their husbands, either. They were the ideas of book writers. It was witchcraft.

The typewriter came along and pretty soon everyone could write readable notes to each other. With the invention of carbon paper came early desktop publishing. Freedom of the press on the individual level. It was horrible. Something had to be done. It was easy to do. Recruit people who hated progress and have them condemn the new machines and attribute all sorts of evil to them. Scare people away from the things. It might have worked except that some darned wars came along and distracted people from targeting the real enemies: the typewriter, the printing press.

"Will this forward march towards a technological Armageddon ever end?" asked the Rev. Daniel Dvorak in 1916. "We must fight this thing called progress in every way we can."

I don't know what to say. All I know is that, boy, does my back ache. My eyes are blurred. It's this damned VDT in front of me. Something must be done. □

John C. Dvorak graduated from the University of California. he is a contributing editor of PC magazine and MacUser, considered by many to epitomize the contrarian view of things—a charge that he vehemently denies. Dvorak's motto is: If you have nothing nice to say, then don't say anything at all.

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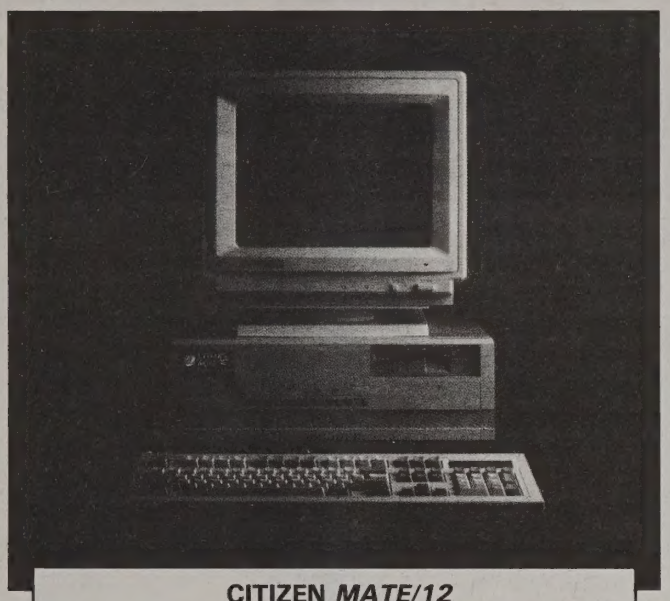

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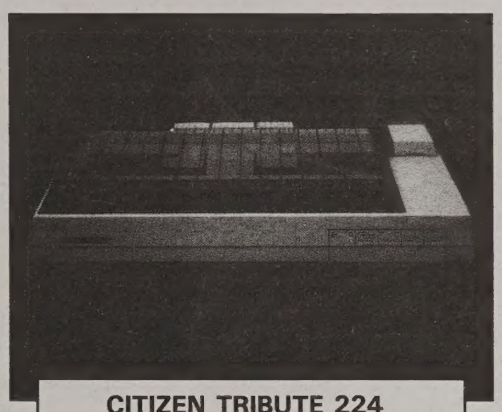

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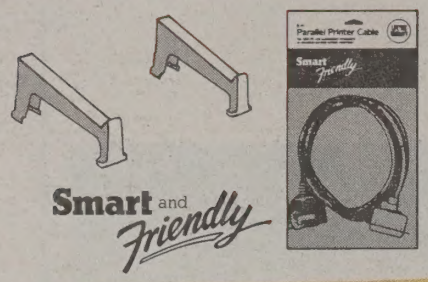

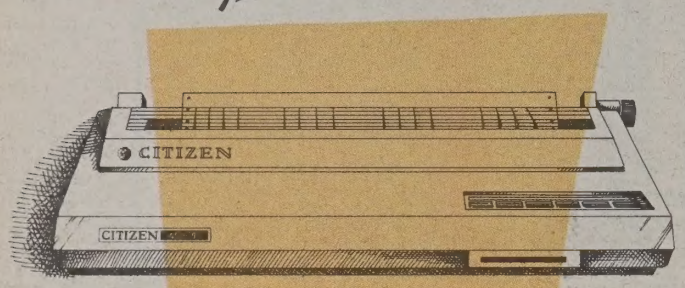

MSP-45: 240 cps • "Soft touch" selection of print speed and fonts • Automatic, motor-assisted paper loading; Citizen exclusive push or pull tractor; top or bottom paper feed • Optional font cards available • Switch-selectable IBM Proprinter/Epson compatibility

Manufacturer's suggested retail $599

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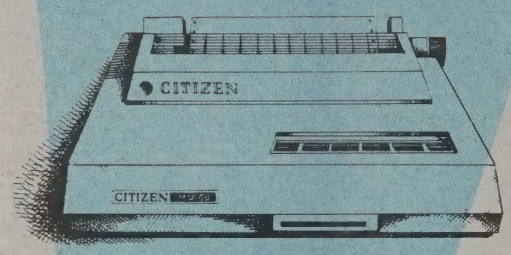

MSP-40: 240 cps • "Soft touch" selection of print speed and fonts • Automatic, motor-assisted paper loading; Citizen exclusive push or pull tractor; top or bottom paper feed • Optional font cards available • Switch-selectable IBM Proprinter/Epson compatibility

Manufacturer's suggested retail $449

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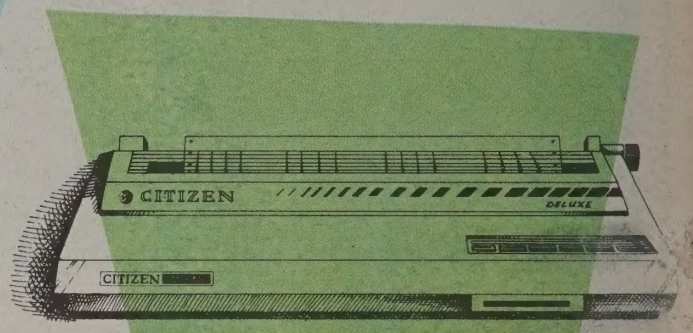

MSP-55: 300 cps draft, 50 cps NLQ • Automatic, motor-assisted paper loading; Citizen exclusive push or pull tractor; top or bottom paper feed • Front panel selects speed, font, quiet mode, and optional color

Manufacturer's suggested retail $699

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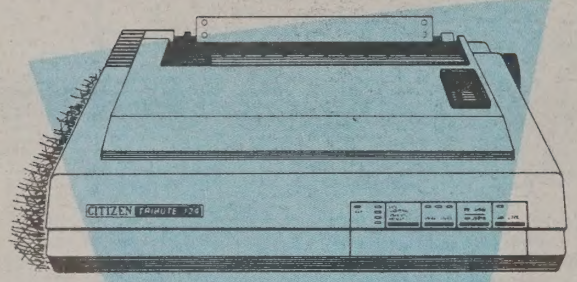

TRIBUTE 124: 24 Pin • Color capable (optional at extra cost) • True letter quality at 66 cps • Draft at 200 cps • Parallel and serial interfaces standard

Manufacturer's suggested retail $599

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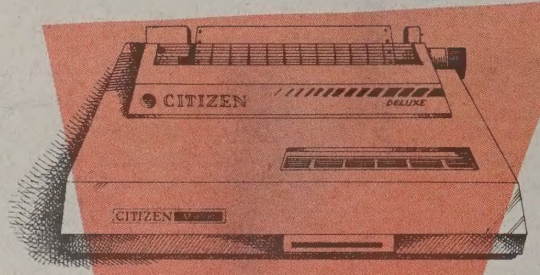

MSP-50: 300 cps draft, 50 cps NLQ • Automatic, motor-assisted paper loading; Citizen exclusive push or pull tractor; top or bottom paper feed • Front panel selects speed, font, quiet mode, and optional color

Manufacturer's suggested retail $499

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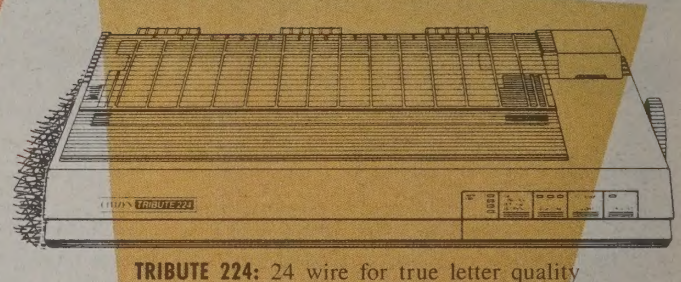

TRIBUTE 224: 24 wire for true letter quality printing at 66 cps, and 200 cps draft • Automatic paper loading • Parallel and serial interfaces standard

Manufacturer's suggested retail $899

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